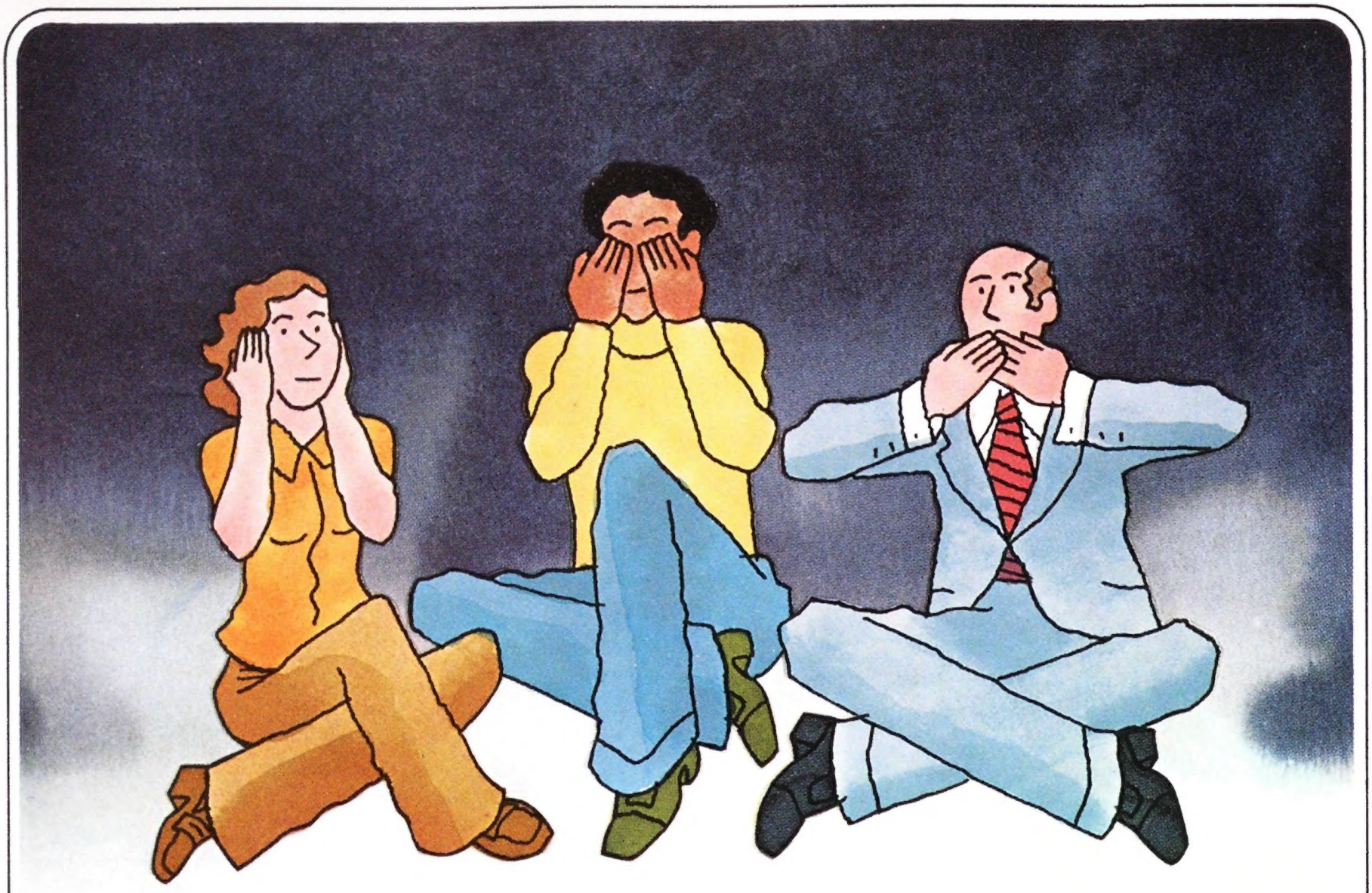
October 1974

Smithsonian

Building of controversial Alaska pipeline (p. 38) gets under way. Caribou invade airport as gas burns off



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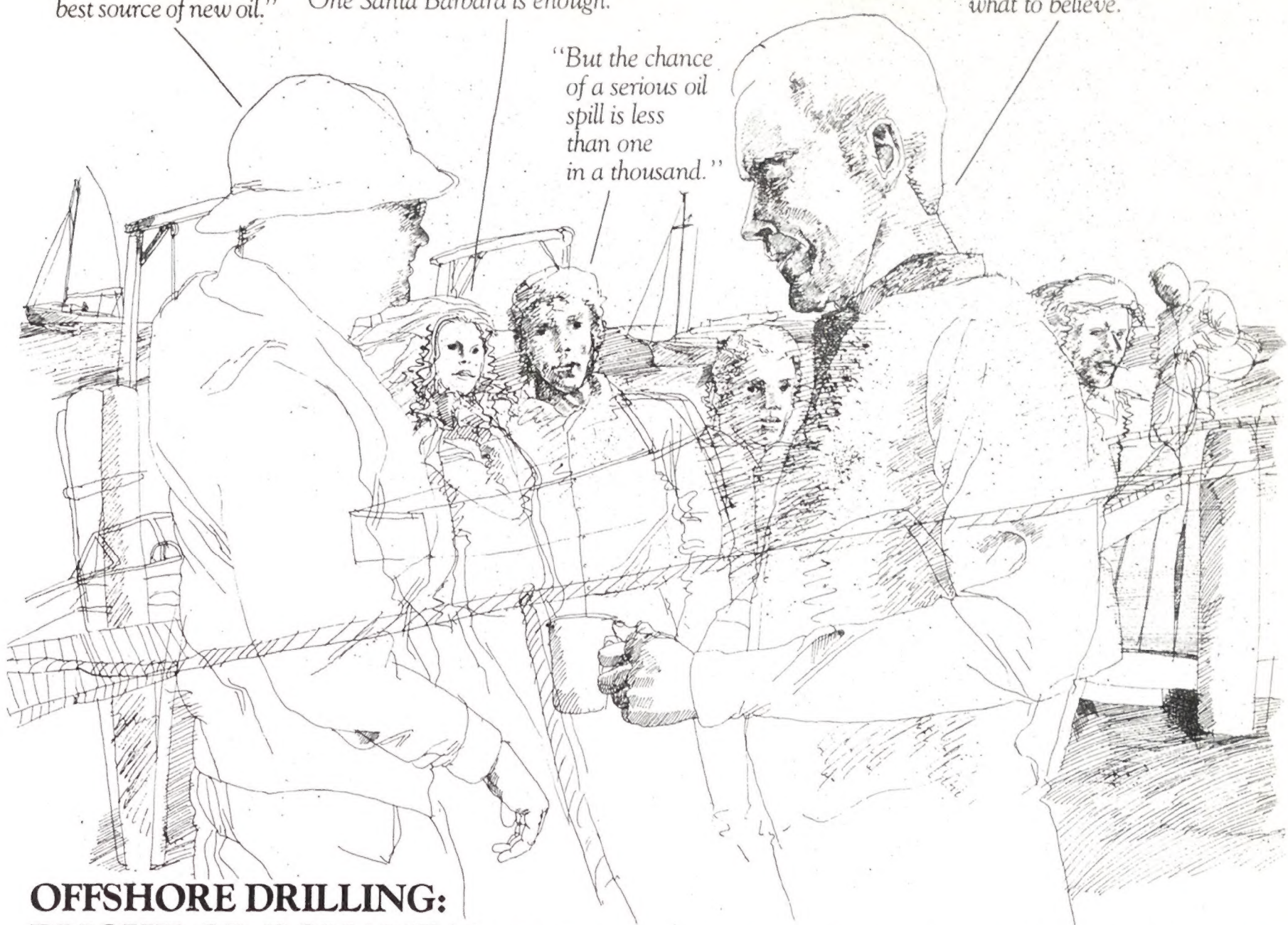
"Offshore drilling is our best source of new oil."
"Maybe so, but it's not worth polluting our beaches. One Santa Barbara is enough."
"But the chance of a serious oil spill is less than one in a thousand."
"I wish I knew what to believe."

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If you'd like to be more informed on both the pros and the cons, write Conoco and we'll send you the following material: a booklet explaining and supporting offshore drilling published by the American Petroleum Institute; and a report of an offshore drilling conference debating both sides of the issue, sponsored by the New York Ocean Science Laboratory.

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Smithsonian

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IBM Reports

Four principles of privacy

For some time now, there has been a growing effort in this country to preserve the individual's right to privacy in the face of expanding requirements for information by business, government and other organizations.

In searching for appropriate guidelines, private and governmental groups have explored many avenues and considered many aspects of the privacy question.

As a company with a vital interest in information and information handling, IBM endorses in their basic purpose four principles of privacy which have emerged from various studies, and which appear to be the cornerstones of sound public policy on this sensitive issue.

1. Individuals should have access to information about themselves in record-keeping systems. And there should be some procedure for individuals to find out how this information is being used.

2. There should be some way for an individual to correct or amend an inaccurate record.

3. An individual should be able to prevent information from being improperly disclosed or used for other than authorized purposes without his or her consent, unless required by law.

4. The custodian of data files containing sensitive information should take reasonable precautions to be sure that the data are reliable and not misused.

Translating such broad principles into specific and uniform guidelines will, of course, not be easy. They must be thoughtfully interpreted in terms of the widely varying purposes of information systems generally.

In particular, the proper balance must be found between limiting access to information for the protection of privacy on one hand, and allowing freedom of information to fulfill the needs of society on the other.

But solutions must be found. And they will call for the patient understanding and best efforts of everyone concerned. In this search, IBM pledges its full and whole-hearted cooperation.

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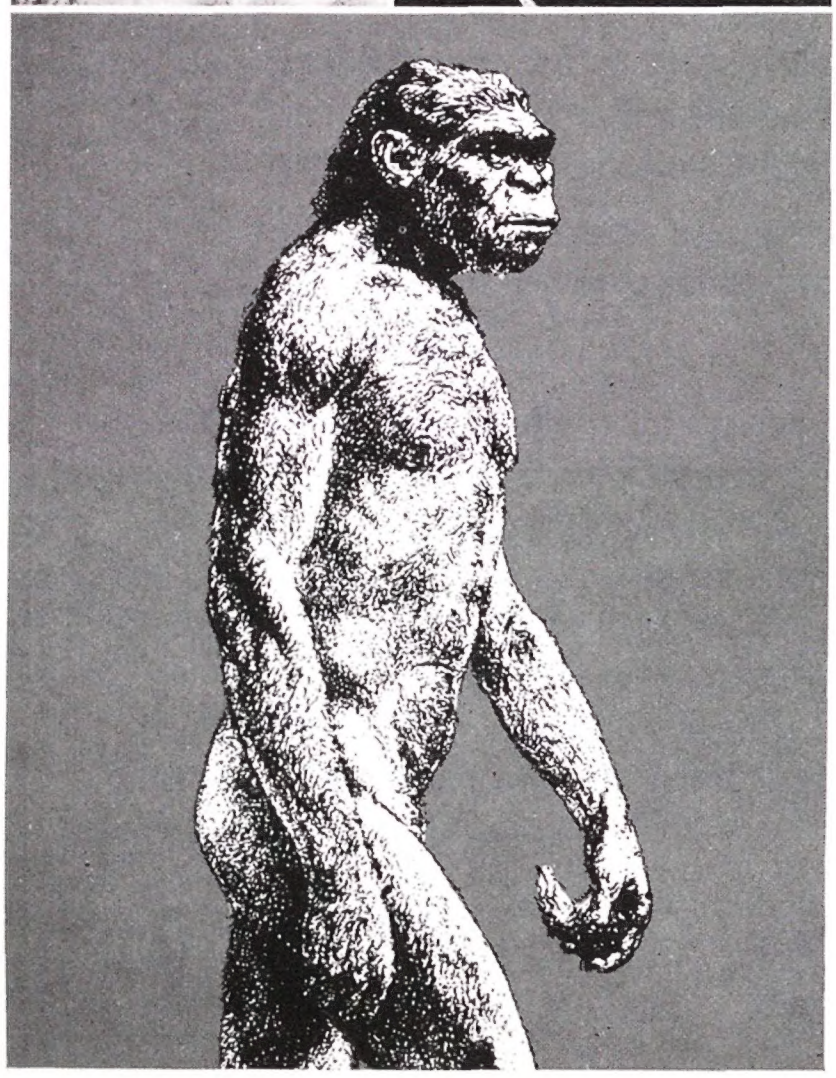

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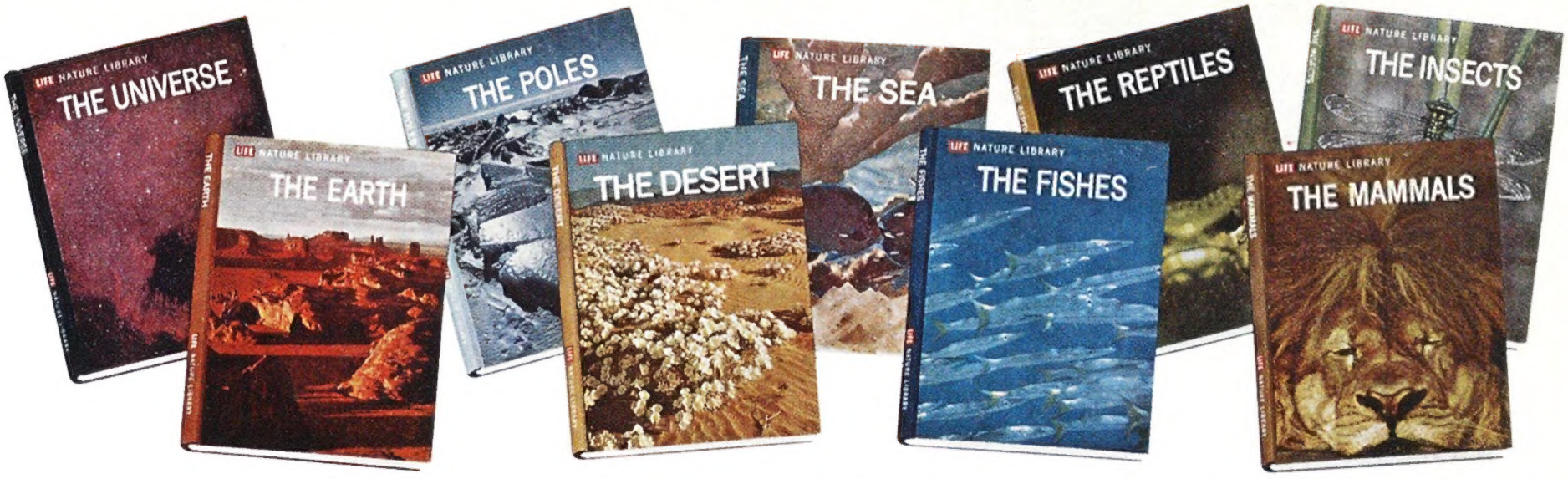

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. . . and this is a tiny speck of it, the planet we call earth . . . a strange, wonderful, and improbable world . . .

. . . so cold in spots the temperature plunges to —140° and the icesheet is 9,200 feet thick . . . so warm in others the temperature has reached 136° in the shade . . .

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. . . where it flourishes today even at depths of six miles . . .

. . . life that moved onto the land . . .

and always changing, experimenting, reaching...

. . . and took wing . . .

. . . all depending on (and making possible) a variety of vegetation from tiny flowers to massive redwoods . . .

. . . existing in an intricate chain that relates every living thing on the face of the earth . . .

. . . groping for new and better ways of survival . . .

. . . survival largely by instinct . . .

. . . and, in one of nature's most amazing creations, survival by imagination, by thought, by the intelligence of the human brain that is able to read this right now!

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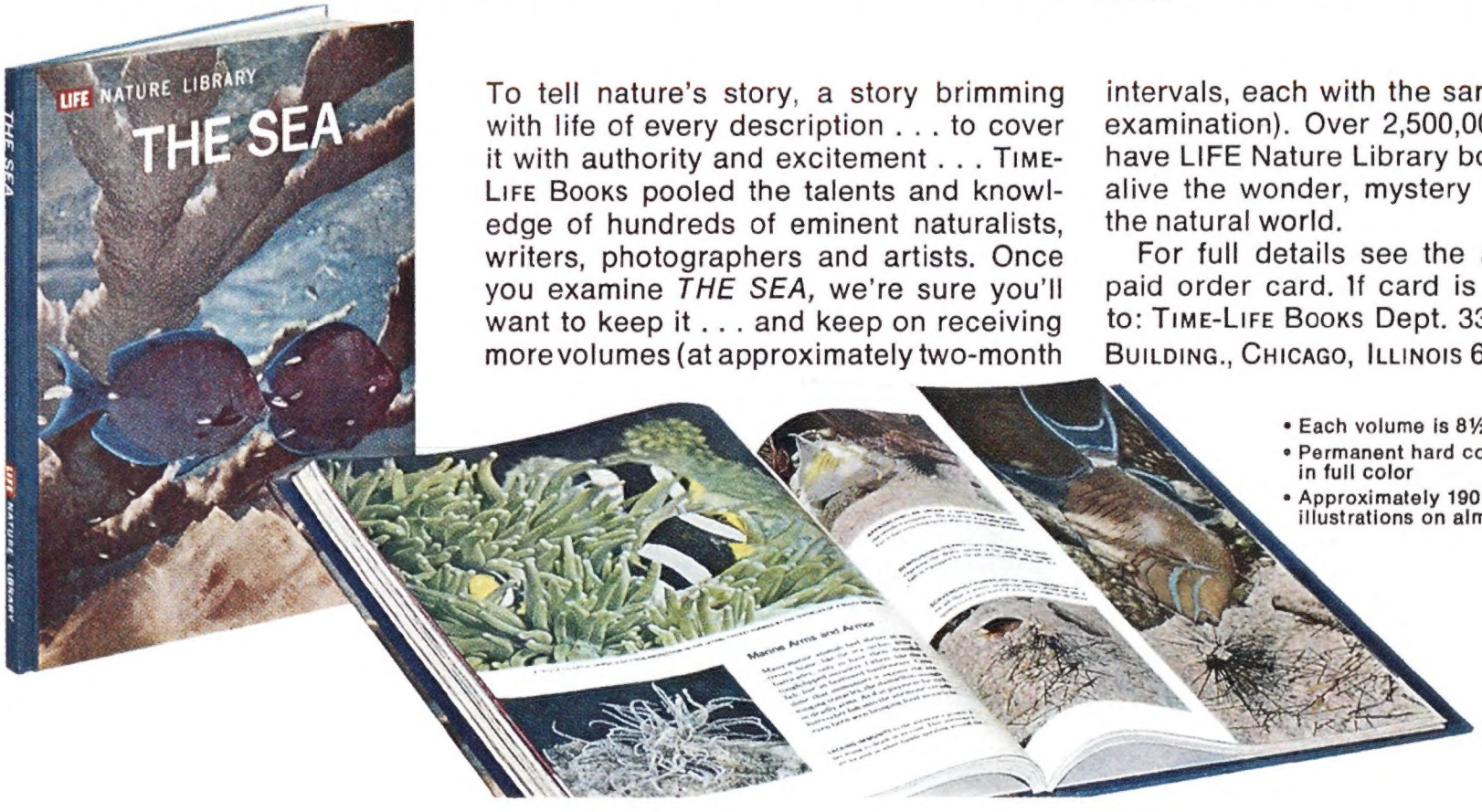

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The view from the castle

Receiving an honorary degree at Cambridge prompts some reflections on education today

Beyond the scudding clouds the sky is blue and, when the sun breaks out, the magical lawns of Cambridge, England, ribbed by the mathematically precise lines of the mowing machines, are as green as ever. Against the creamy-buff mortised stone facades of authentic Tudor buildings, the masses of flowers in perennial borders—iris, peony, anchusa —clematis on the walls and rock plants among the flagstones wind like silk crewel embroidery through one of the most civilized urban landscapes in the world.

Marching toward the Senate house are a top-hatted Usher and two gowned Esquires Bedell carrying three silver maces; the Chancellor, Lord Adrian, gently majestic in black and gold, his long train held by a trainbearer in knee breeches, sword and plumed hat—and all of us following behind.

The scene epitomizes the serenely traditional academic ritual. And we are all gorgeous, as only the medieval descent of academe can prescribe. Mortarboards or black velvet "bonnets," trimmed with gold cords and tassels, and such gowns—the Vice-Chancellor in scarlet fronted with a sort of bib of ermine; the Masters and the degree recipients in scarlet trimmed with blue or pink "shot through with light blue"; the Orator in black with white clerical bands ready to deliver his orations in Latin, one for each of us and full of puns; a celebrated musician, robed from head to toe in cream-colored brocade, and finally the "Bulldogs," the traditional Keepers of Order, equipped with halberds and huge Bibles hung from a ring of chain (to hit the unruly students over the head with?).

Even the students, clad in the current faded blue jeans, pause in amazement and snap pictures, certainly an unconscious recognition of some remnant affection for traditions of university life.

How long will it last? As the Master of one of the Cambridge colleges described it to me, one of the government-supported provincial universities is now in a virtually uncontrolled state, the students prescribing courses, curricula and passage into higher education for their fellows. The Labor Government seems determined to wipe out private secondary school education. In the name of equality, high-grade education for the few at that level is regarded as immoral by the present government because it allows the better student to forge ahead, thus leaving the less fortunate behind. This should not be allowed in an egalitarian society, apparently.

The Secretary with Baroness Lee of Asheridge, formerly Jennie Lee, M.P., the widow of Aneurin Bevan.

Few seem to realize that what these logical and sensible-sounding principles seek to perpetuate is the triumph of mediocrity found in the theoretically socialist states. Education is indeed a competitive process. It *is* elitist in its training of skills. Diversity and pluralism are the foundation stones of our system. They allow for skills at all levels—from those needed for the most intricate technological achievements without which we cannot survive as a culture to those acquired in the pursuit of one's bent, whether in music, agriculture or any other creative career, even including administration.

To denigrate education by eliminating pluralism and diversity, to insist on conformity of academic achievement, the smoothing out of curves, so that finally everyone manages to graduate from college, and thence into an extended playpen of post-graduate "higher" education of some sort, is the madness of logic transmuted into total unreality.

As I listened to the bells of Saint Mary's the Great peal out to our procession, I prayed that the great universities will manage to weather the present wave of fatuous theory and survive, pageantry and all, to buffer us against the dead hand of the monolithic state.

S. Dillon Ripley

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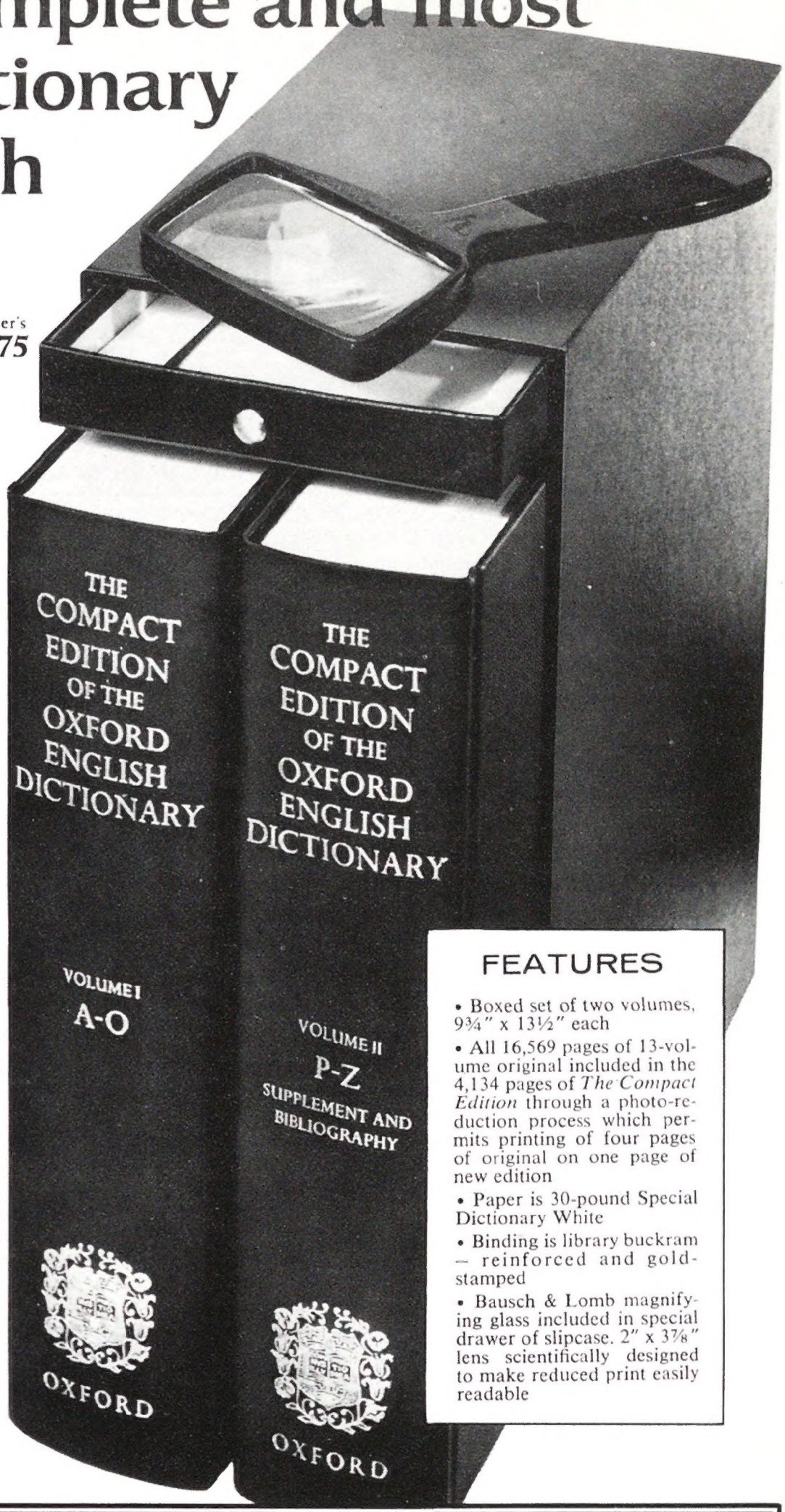

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Edge Thickness: 2.75mm
Fineness: 92.5% of pure silver
Silver Content: 403.6 grains
Face Value: 2,000 Rupiah
Depicts the Javan Tiger

34mm diameter gold proof
Weight: 33.437 grams
Edge Thickness: 2.49mm
Fineness: 90% of pure gold
Gold Content: 464.41 grains
Face Value: 100,000 Rupiah
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While one side of each coin of a country will have a different reverse design representing an endangered species, the other side of all coins will show the traditional design struck on coins of that country.

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Applications for the first six countries' issues of the Conservation Coin Collection are now being accepted. All six issues will be completed by August, 1975. The first coins—from Indonesia—are ready for immediate delivery and will be followed by Tanzania, Costa Rica, Nepal, Thailand and Mauritius, issued at two-month intervals starting October, 1974.

REFUND PRIVILEGE: If, for any reason, you are not satisfied with any of the coins (proof or uncirculated) purchased in response to this offer, you may return them, in their original condition, within 90 days of receipt to Spink & Son, Ltd. for either exchange or a full refund.

SILVER COINS

Please accept my application for the coins I have indicated below from Indonesia. I understand that you will reserve for me the same coins from Tanzania, Costa Rica, Nepal, Thailand, and Mauritius. I enclose payment for the Indonesian coins and agree to pay for each of the subsequent issues in advance of shipment.

Quantity		Amount Payable with Application
_____ Limit 1	38.61mm and 42mm silver **proof** set at $50 per set	$_____ E1
_____ Limit 2	38.61mm and 42mm silver **uncirculated** set(s) at $32.50 per set	$_____ G1
	Add $2.50 to cover processing, registered mail, postage and insurance for the first issue	$2.50
	Total amount payable now for first issue	$_____

Make checks or money orders payable to Conservation Coin Collection.

GOLD COINS

Please accept my application for the coins I have indicated below from Indonesia. When legislation allowing U.S. citizens to own freshly minted gold coins becomes effective (January 1, 1975, or sooner), and if my application is accepted, you will reserve for me the same coins from Tanzania, Costa Rica, Nepal, Thailand and Mauritius. You may bill me for the same gold coins of any issue which may have been struck prior to that date. I agree to pay for each of the subsequent issues in advance of shipment. This application is made without obligation to myself or Spink.

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_____ Limit 1	34mm gold **proof** coin at $720 per coin	$_____ A1
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Letters to the Editor

Injured birds

Dear Sir: After reading your article in the August issue, "Volunteers rescue injured wildfowl," I was shocked and sickened at the plight and ultimate end of so many beautiful birds.

Of course, we all know that there are many "sickies" in this world who delight in the mistreatment of birds as well as other creatures. What really puzzles me is that a state such as Florida, now enjoying vast development, progress and wealth, seems to ignore the plight of its birds—so important a part of its natural environment.

As for Ralph and Linda Heath, they are "saviors" doing their job with understanding, loving care and dedication.

Anne De Martino
Staten Island, New York

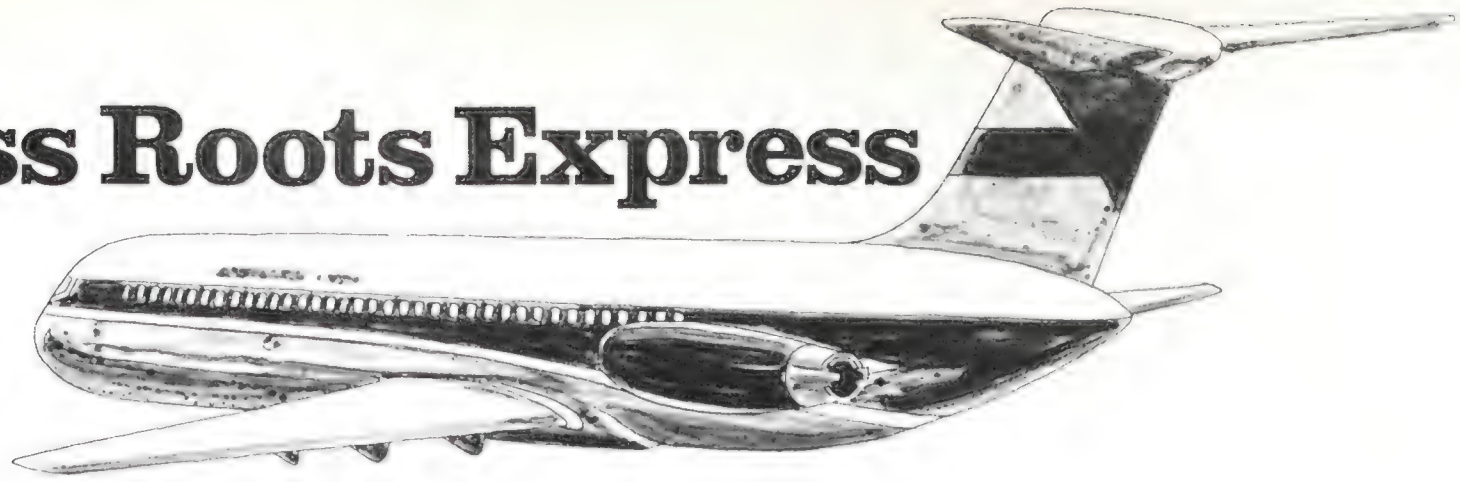
Dear Sir: During a tour last spring of the sanctuary, I was very much impressed to find out that Ralph Heath was relatively self-taught in his work with the birds, but the highlight of my visit was seeing a pelican nesting. According to the Heaths, theirs is the first incidence of pelicans nesting in captivity. I never heard whether or not the eggs hatched successfully and was disappointed that your article did not mention them.

Teresa Zent
Taneytown, Maryland

There were two thin-shelled eggs, but unfortunately both broke in the nest. The pair of pelicans are still in Heath's compound. Ed.

Dear Sir: Your article, "Volunteers rescue injured wildfowl," restores my faith in

Grass Roots Express



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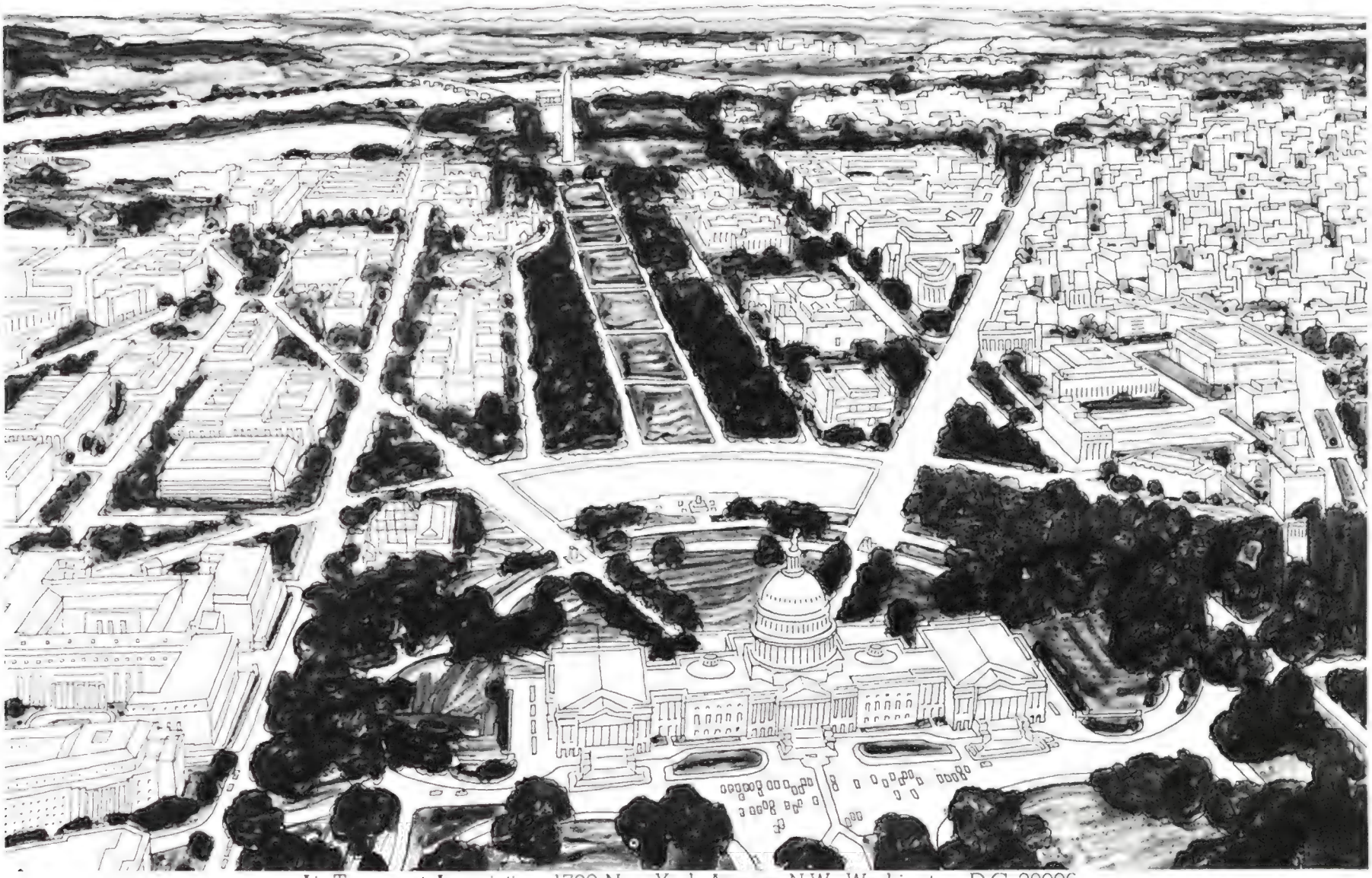

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the basic goodness of man. After seeing the wanton and wholesale destruction of much of our wildfowl and wildlife, some done with terrifying sadism, Ralph and Linda Heath offer a fresh breath of air. Instead of murderers, they are healers, and hence aid not only the wildfowl of Florida but all mankind by acting to save our wildlife.
David W. Tschanz
Stratford, Connecticut

Dear Sir: We were distressed by the cover photograph and the article's description of the other injured birds. My wife and I would like to have the Heaths' address so that we can contribute to their efforts to save Florida's seabirds.
Lee Kramer
Chicago, Illinois
For the Kramers and others who have written that they wish to contribute, the address is: Suncoast Seabird Sanctuary, 18323 Sunset Boulevard, Redington Shores, St. Petersburg, Florida 33708. Ed.

Dear Sir: I thought your readers might want to know that there was a happy ending for the blue heron, which I photographed for the August cover.

Some three or four weeks later, when I came back to St. Petersburg for some additional photography, I returned to

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the same section of seawall where I had first seen the bird. Great blue herons are strongly territorial and stake out a fairly large section of waterfront.

Sure enough, it was there but minus the arrow, which had apparently worked its way out. There was no doubt about its being the same bird, since examination through binoculars showed the scar tissue on the neck quite clearly.

I would also like to mention that the marine patrol officer, who had first pointed out this bird to me, and I spent the better part of three days trying to snare the heron in an effort to remove the arrow. However, the bird was too wary. We could never get it close enough to our snare, even when baited with fish.

Dan Guravich
Greenville, Mississippi

"Elementary" particles

Dear Sir: The interesting article by James S. Trefil on the plethora of "elementary" particles accurately reflects the climate of opinion currently dominating the U.S. physics community.

Another "school" has been developing for a decade, mainly in Europe. This approach treats the "neutrino sea" as a Fermi gas of uncharged particles, which permeates all space, and acts as a substrate and common denominator in all particle reactions. This is a return to the concept of a "particulate ether" or "subquantic medium," similar to the concepts advanced by two Nobel laureates: Dirac and de Broglie. In fact, very recently Dirac advised a group of U.S. physicists to stop looking for more and more particles and direct their efforts elsewhere.

H. C. Dudley
Professor of Radiation Physics
University of Illinois Medical Center
Chicago, Illinois

Hirshhorn museum

Dear Sir: In your article on the Hirshhorn Museum and Sculpture Garden, the photograph showing Joseph H. Hirshhorn and his wife in front of Rodin's *Burghers of Calais* raises a question. How many casts of the *Burghers* are there?

I have been under the impression that the first of the series was installed at Calais in 1895. Number two in the series stands beside the Houses of Parliament on the banks of the Thames in London.

10 years ago, these 3 little pieces of paper were valued at $600.

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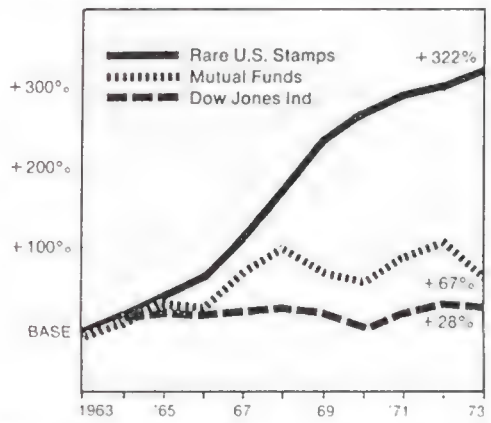

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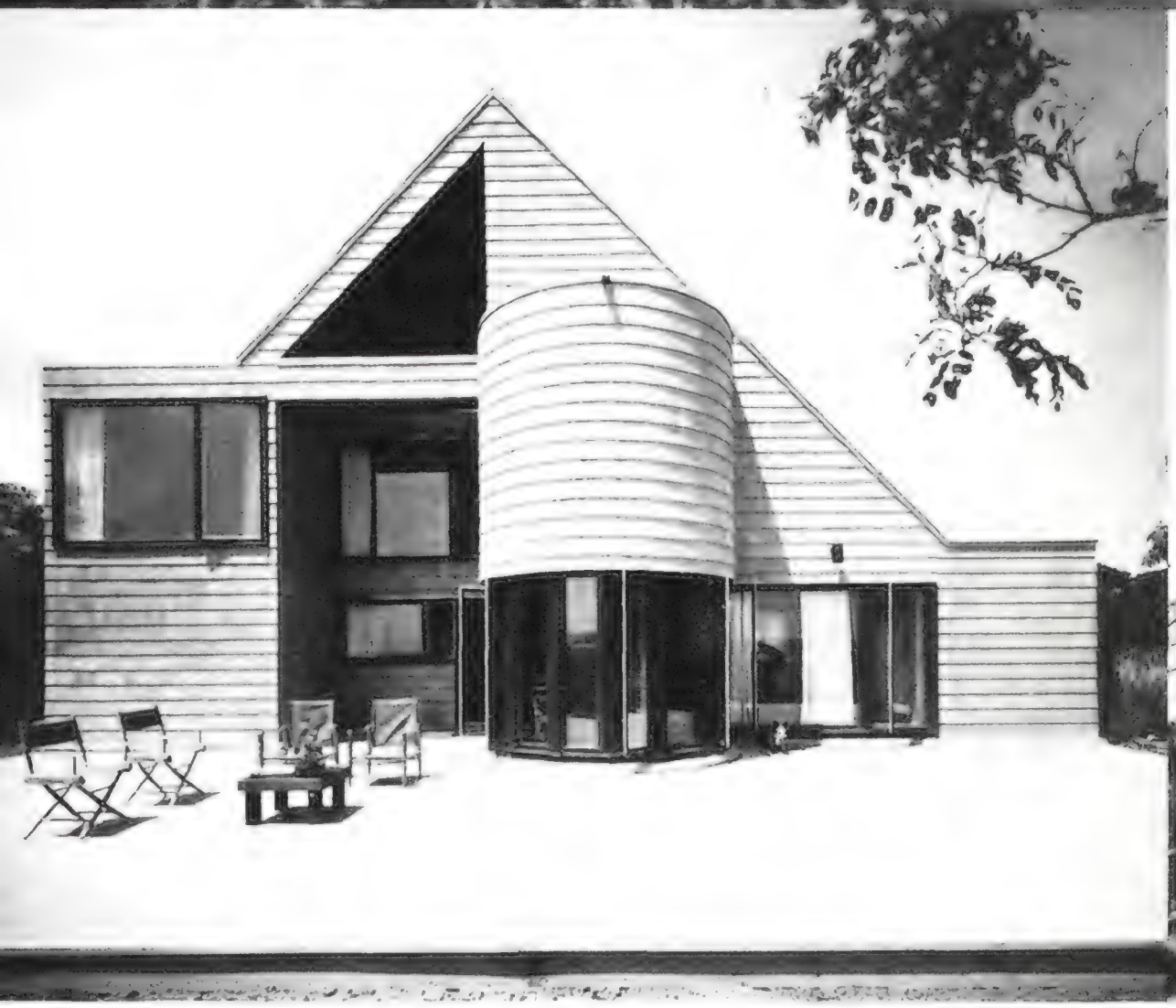

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- Frankenstein ☐
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- Wilde's Short Stories ☐
- Anna Karenina ☐
- Portrait of the Artist ☐
- The Iliad of Homer ☐

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Another cast of this series was part of the gift of Jules E. Mastbaum to the city of Philadelphia, and for many years that *Burghers* was outside the Philadelphia Museum of Art until it was placed inside the Rodin Museum in Philadelphia.
Mahlon Addis
Oreland, Pennsylvania
Rodin's Burghers of Calais *was originally cast in an edition of eight. In addition to the Hirshhorn* Burghers *and those mentioned above, others in the series are to be found in Paris, Basel, Brussels and Copenhagen.* Ed.

Another view of the Hirshhorn *Burghers*

The new China

Dear Sir: William O. Johnson's article on the new China gives me a whole new light on that country. I was under the impression that the kindly lady, Madame Mao, and her husband had murdered millions of their fellow citizens in the name of the Great Revolution, that wife-beating and foot-binding went out of style before the revolution. I also have been under the impression that many thousands of the people of Red China have risked their lives swimming to Hong Kong and Macao and many thousands have lost their lives trying to escape this beautiful country and the orderly, clean, controlled life that now is ruled by the husband of the "dignified, even *regal*" Madame Mao.
William Austin Barrows
Key Largo, Florida
That there have been excesses in the past and that many have risked their lives in trying to escape this controlled land is undeniable. It also seems undeniable from the vignettes of Johnson's first-hand observations that Chinese women today have a greater chance for equality with men than ever before in their history.

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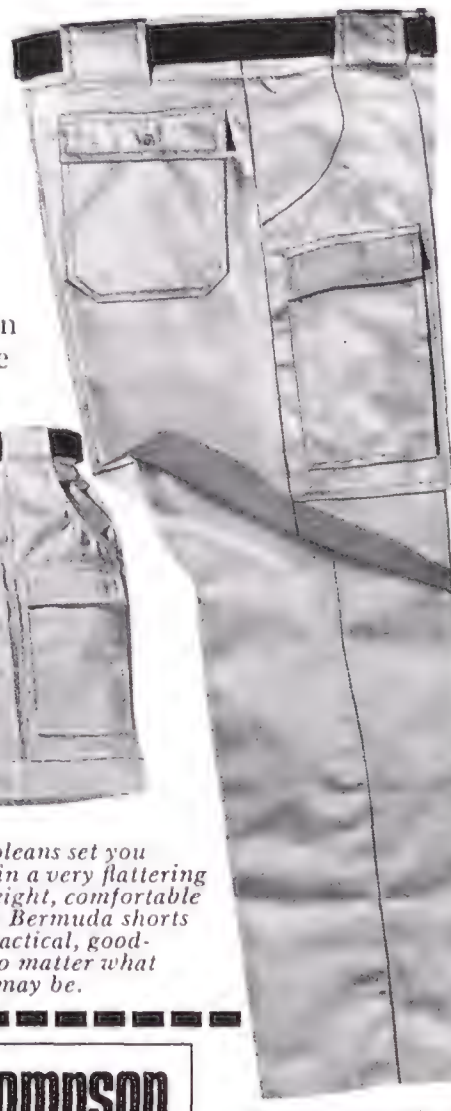

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Escape from the ordinary

While foot-binding had already been discontinued, it was the Marriage Law of 1950 that gave women equality and made wife-beating, female infanticide and arranged marriages illegal. Ed.

Texas Longhorns

Dear Sir: If your correspondents in the August Letters column, Karl D. Vass and Carl-Olaf Janér, had investigated the Longhorns in 1927, they would have found that the Forest Service, briefly mentioned in your article, had two key men working on Longhorn preservation—Will C. Barnes and John Hatton.

The movement for preservation was begun by Barnes and gained the support of others, including veteran stockman John B. Kendrick, U.S. Senator from Wyoming, who was able to get Congress to appropriate $3,000 for the project in 1927.

Frank J. Smith
Director of Range Management
Forest Service
Washington, D.C.

Community gardeners

Dear Sir: Thank you for your article, "Empty lots bloom in nation's cities." I am appalled at our city streets becoming a dumping ground. There are so many areas that could become picturesque spots of greenery, flowers or vegetable gardens. It is too bad that it takes inflation or disaster to motivate people to become Mr. and Mrs. Green Thumb.

Anita Hicks
Van Nuys, California

Jigsaw puzzles

Dear Sir: In your article, "Past teaching aids in jigsaw puzzles," you have the following caption: "'Componium Pittoresque' allows almost limitless number of views (estimated at more than 200,000) to be composed by arranging 36 pieces within a frame which holds three strips at a time."

This estimate is far from "limitless." If three strips are used each time and all are put in the frame right-side up, then a mathematical formula for this permutation yields precisely 42,840 different views (36 x 35 x 34).

As a high school mathematics teacher, I found this a fine example of how mathematics can provide the answer to a ques-

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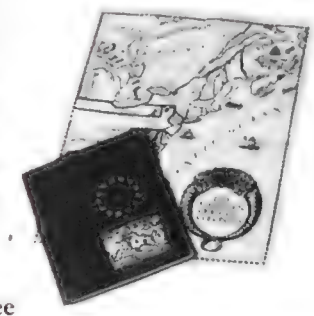

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Please send me, free, the first spoon in your 13 Original Colonies Bicentennial Commemorative Spoon Collection, together with the next two spoons at $2.50 each for a total of $5 (includes postage). Also include, at no extra cost, your commemorative booklet and 13 Colonies map. If not delighted, I may return entire shipment in 10 days for full refund. Otherwise, bill me $5 each month in advance for two more spoons until my set is complete. I may end my subscription at any time. Upon completing my set, I will receive a display rack at no extra cost.

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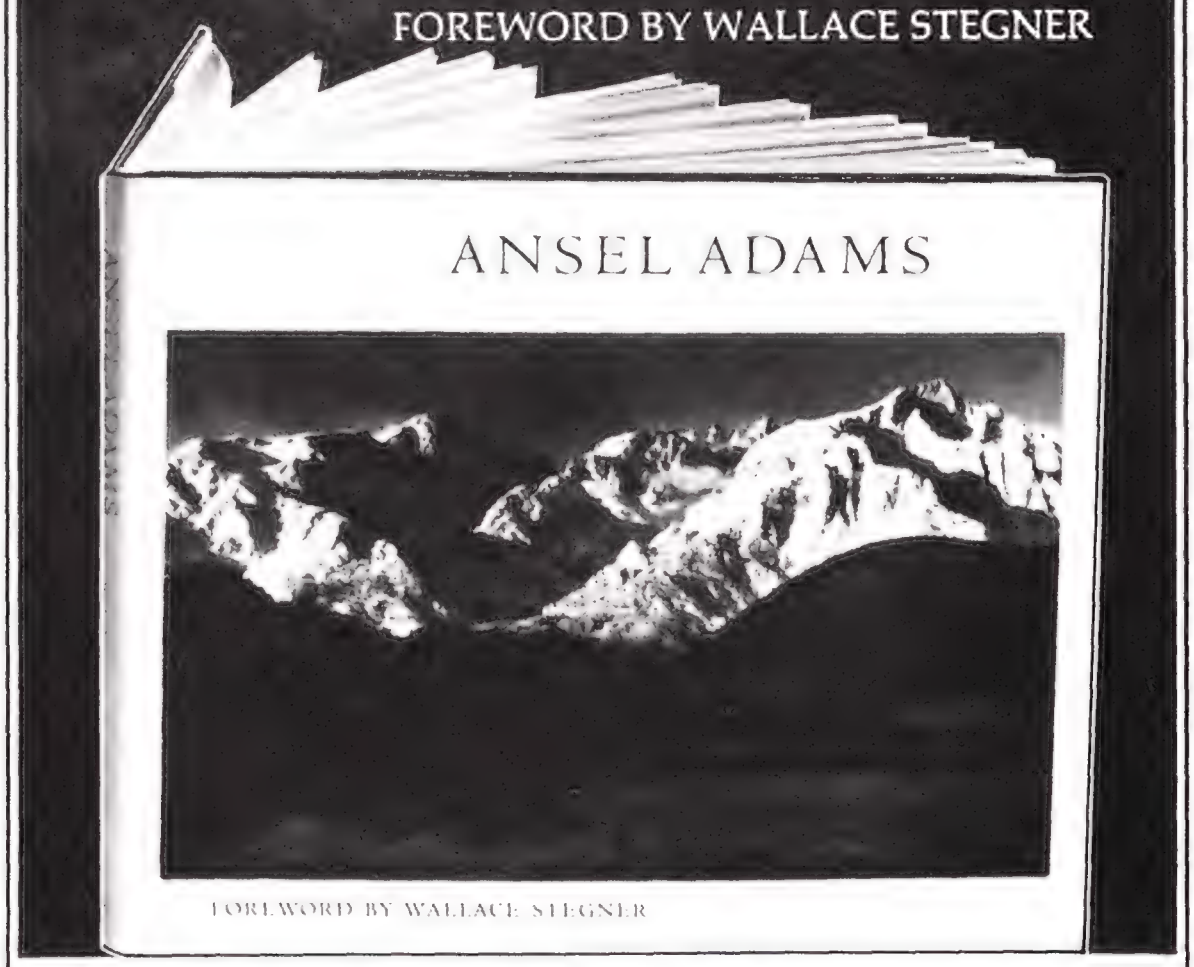
Ansel Adams
IMAGES 1923-1974
FOREWORD BY WALLACE STEGNER



A monument in the field of creative photography and the graphic arts

ANSEL ADAMS is one of the great artists of the 20th century—a photographer whose genius and skill create images that intensify the emotional effect of visual experience. Now, in his 72nd year, he has reviewed the output of a lifetime, carefully selecting his finest work. He has personally supervised every step of the production of this magnificent volume to achieve the finest reproductions humanly possible. Pulitzer Prize-winner Wallace Stegner has provided the foreword, giving striking insights into Adams' development as a photographer, his ideas, and his working methods.

Because of the time and care required to manufacture ANSEL ADAMS, and because of the scarcity of the special paper used, the supply this fall is limited. To be sure of getting your copy, order as soon as possible. 120 duotone reproductions. 128 pp. 16⅝ x 13¾ ins. Slipcase. $65.00 until 12/31/74; $75.00 thereafter. A signed and numbered limited edition, in a boxed portfolio with a signed and numbered original print, $275

NEW YORK GRAPHIC SOCIETY
11 Beacon Street, Boston, Mass. 02108/A Time Incorporated Company

tion that would be difficult and time-consuming to solve any other way.
Frank D. Young III
Uniondale, New York
Mr. Young is correct. Ed.

"Lost" office supplies

Dear Sir: In Patrick Ryan's article, the most interesting statistic in the Munich survey on paper clips may have been the "missing" 7,000. For example, I keep one in my pillbox for prying out oversized capsules, and was able to save my automobile license plate one day by substituting two paper clips (one from the pillbox and a stray from my purse) for the lost nuts and bolts.

But how do you account for "20,000 clips" being 25 percent of the total of 100,000? I hope the error is yours and not made by the Munich study. If it were the latter, I would lose faith in those meticulous statistics.
Barbara S. McKenna
Mamaroneck, New York
It was our error. Ed.

Dear Sir: As a corporation office manager, my observation is that the 7,000 missing clips were probably used by female employees in the popular hobby of necklace pendants made from—you guessed it—paper clips.
Hal M. Lewis
New York City

Dear Sir: I read with interest and amusement Patrick Ryan's article on the "Universal Emergency Kit" (alias the paper clip). I had just anchored a recalcitrant lock of hair with a paper clip in order to be able to read SMITHSONIAN.

It is truly one of the unsung marvels of our time.
Joan Griffin
Malverne, New York

Picture Credits

Cover Don Carl Steffen; 12 Dan Guravich; 16 Hirshhorn Museum and Sculpture Garden, Smithsonian Institution; 32-33 Peter Copeland; 38-49 Don Carl Steffen, map by Francis & Shaw, Inc.; 52-59 Irving Penn; 62-68 John Huehnergarth; 72-79, 81 Carl Mydans; 84-89 Henry B. Beville; 90 Bonnie Dalzell; 91 Henry B. Beville; 92-93 Frank Scherschel; 93 top from *Los Restos de Colon en Santo Domingo* by Emiliano Tejera; 93 bottom Walter R. Aguiar; 94 courtesy O.A.S.; 96 Walter R. Aguiar; 98 Bettmann Archive; 99 Walter R. Aguiar; 100-102 Robert W. Kelley; 104-105, 107 David Easterla; 108 from *They All Played Ragtime* by Rudi Blesh and Harriet Janis; 109-111, 115, 117, 120 Dennis Simon; 23 Patricia Sarr; 140 W. B. Park

La Grande Liqueur Francaise

After coffee enjoy

Benedictine

The spectacular way to end a dinner and begin an evening

Julius WILE SONS & CO. INC. NEW YORK 86 proof

A special opportunity for Smithsonian Associates to commemorate the opening of the HIRSHHORN MUSEUM and SCULPTURE GARDEN October 1974

LARRY RIVERS,
SERIGRAPH, 10 COLORS
SIGNED. EDITION of 100
30" x 40"

POSTER REPRODUCTION
24" x 32"

ROBERT INDIANA, 1974
SERIGRAPH, 4 COLORS
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24" x 30"

WILLEM DE KOONING, 1943
"QUEEN OF HEARTS"
POSTER REPRODUCTION
24" x 36"

KENNETH NOLAND, 1958
"BEGINNING"
POSTER REPRODUCTION
24" x 32"

Original serigraphs created especially for the opening by two of America's most distinguished and popular artists, **Robert Indiana** and **Larry Rivers.** Each work is in an edition of 100, signed and numbered by the artist.

Robert Indiana: Associates—$150; Public—$175
Larry Rivers: Associates—$200; Public—$225

Poster reproductions of two paintings in the collection by American masters **Willem De Kooning** and **Kenneth Noland,** together with reproductions of the **Indiana** and **Rivers** serigraphs. Sold as a series of four only. The series will not be reprinted.

Series: Associates—$20; Public—$25

Use order form below—orders will be honored by date of receipt

PLEASE SEND ME	QUANTITY	PRICE	SUB-TOTAL
Robert Indiana serigraph			
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Series of four poster reproductions: **De Kooning; Noland; Indiana; Rivers**			
	POSTAGE, HANDLING, INSURANCE		$1.00

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Please make check payable to Smithsonian Institution and return to:

Smithsonian Resident Associate Program
Smithsonian Institution
Washington, D. C. 20560

The opening of the Hirshhorn Museum and Sculpture Garden, the Smithsonian's newest museum on the Mall, will be a landmark for the nation. The museum is America's first national museum of modern art. The museum houses one of the foremost collections of modern art in the world, a gift to the people of the United States. These posters offer the opportunity to add works by four of America's greatest artists to your collection, and also to own a permanent record of this one-time occasion in the history of American art.

Announcing...
an important new program from the Smithsonian

Since its founding, the Smithsonian Institution has been concerned both with the increase of man's knowledge and with its diffusion, by a variety of methods, to an ever widening audience. As a visit to any of our ten museums will indicate, exhibits are a prominent and traditional medium for the communication of ideas, inventions, and innovations. The *Smithsonian* magazine is, of course, another important medium.

And our new Product Development Program provides Americans with still another way to share the treasures that have made the Smithsonian the trustee of America's heritage. This program will make it possible for men, women, and children who cannot visit Washington to learn about and enjoy the historical collections of the Smithsonian. It will also make it possible for the more than 20 million tourists who do visit the Smithsonian annually to take home with them various interpretations and copies of items in the Smithsonian to share with their neighbors and friends. In addition, it will make it possible for Associates and others to obtain interesting gifts by mail.

Among our initial offerings, which will be available nationally as well as through our Museum Shops, will be items from these companies:

- The Tonka Corporation has created educational hobby craft kits based on historic objects on display in the Smithsonian. These kits, called Tonka Dioramas, are accompanied by 24 page booklets which explain the importance of the historical events depicted in the dioramas.
- The Stieff Company is manufacturing and distributing silver and pewter reproductions and adaptations of items in the Institution's collections.
- Fieldcrest Mills is manufacturing coordinated lines of textile products in patterns inspired by the designs of original artifacts in the Smithsonian collections.
- Alva Museum Replicas is developing a group of sculpture and jewelry reproductions from the Institution's collections.

A basic tenet of this continuing and expanding effort to take the Smithsonian beyond the Mall in Washington is that it be conducted with concern for the Institution's integrity and interests. Smithsonian staff members are guided by a deep sense of responsibility and understanding of the fact that the Smithsonian occupies a unique and significant position in our nation. Our curatorial staff, attorneys and administrators will continue to review carefully new products before approving any identification with the Smithsonian.

We hope you will enjoy the products we have developed. To learn more about them, please see the advertisements on the next seven pages.

Stieff Co.

The Stieff Company, one of the leading manufacturers of sterling silver, silver plate and pewter in the United States, is reproducing a variety of objects from the Smithsonian collections. These reproductions include a tankard, a bowl, a cup, measures and jewelry. Of special note are the blazer buttons, pin and pendant adapted from a George Washington Inaugural medal and the replica of a punch cup given to the commander of Fort McHenry for its successful defense in 1814. These and many other reproductions will be available after January 1, 1975. Further information can be obtained by checking the appropriate box on the attached reply card.

The Stieff Company
Silversmiths/Goldsmiths/
Pewterers
800 Wyman Park Drive
Baltimore, Maryland 21211

Tankard & Ft. McHenry Punch Cup

Measures

Pin & Blazer Buttons

Ship Bowl

ALVA
MUSEUM REPLICAS

For art lovers with more taste than money...

These authentic replicas by Alva lovingly hand-finished to recreate the look of each Smithsonian original. Gift box with descriptive history.

Golden* Chinese Translations from the Jade Originals.

USM-71
Heavenly Happiness: stylized clouds surround the calligraph for happiness. Pin $7.50 Pendant on chain $8.50

USM-70
Stylized Butterfly: Chinese equivalent of cupid and conjugal felicity. Pin $10.00 Pendant on chain $12.50

USM-72
Double Happiness: surmounted by stylized dragons—often given as wedding presents. Pendant on chain $8.50

USM-66
Chilean Indian Earrings**: traditional form. Earrings (Pierced or Screw Back) $7.50 Matching Pendant $7.50

USM-67
Mexican Trading Cross**: 18th Century. On chain $8.50

USM-81
Egyptian Sacred Eye Ring*: from faience original—1000 B.C.—Medium Only $7.50

USM-68
Russian Amulet Cross*: with simulated garnets. On chain $12.50

USM-79
Sea Captain: Haida Indian carving. 17" high. Alvastone** replica $50.00

* gold electro plated
**silver plated
Pieces shown reduced.

From Fieldcrest

AMERICAN TREASURES

Created from designs in THE SMITHSONIAN INSTITUTION, WASHINGTON, D.C.

On the next two pages, you'll see perhaps the most remarkable collection of bed and bath fashions ever created. From Fieldcrest, inspired by the great American treasures in the Smithsonian Institution.

The Smithsonian is, of course, much more than a museum. A source of wonder and enjoyment to millions of Americans, it is our nation's pride—dedicated since its founding in 1846 to "the increase and diffusion of knowledge among men."

Here you can marvel at the original Wright Brothers airplane, see the Inaugural dresses of our First Ladies, gaze into the Hope Diamond's mysterious blue and smile back at George Washington's false teeth. The Smithsonian explores the Panamanian jungle and the Atlantic depths. It subsidized modern rocketry long before anyone realistically conceived of propelling man to the moon. It's a research center, an astronomy center, an art lover's dream, a historian's delight. Most of all, the Smithsonian is a shining reflection of 200 years of our nation's finest creative aspirations.

Now Fieldcrest recaptures the imagination, the freshness of some of the Smithsonian's historic possessions.

Here are America's labors of love. Reinterpreted for your home today. Proving that history has a beautiful way of repeating itself.

American Treasures by Fieldcrest. Treasures you will always be proud to own. To see them, just turn the page.

A new collection for bed and bath.

Fieldcrest

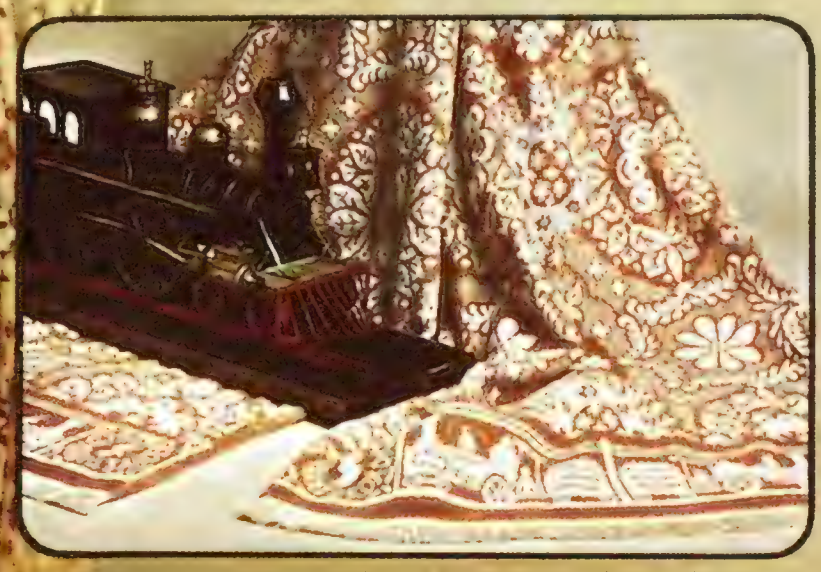
SMITHSONIAN INSTITUTION
History has a beautiful way of repeating itself.
Fieldcrest
A Division of Fieldcrest Mills, Inc., 60 West 40th Street, New York, N.Y. 10018

PATIENCE ROSE

A girl named Patience was 13 when she made a small quilt for her dowry in the 1840's. More than a century later, one of her descendants gave it to the Smithsonian. Fieldcrest has adapted her carefully stitched flower pattern into this elegant design for no-iron sheets, blankets, comforter; also towels and rug.

(The window curtains in this picture were especially made from Patience Rose sheets. Write Fieldcrest for directions.)

DOUBLE BOWKNOT • Original coverlet was made about 1867 in Jackson County, Ohio, and based on a popular geometric pattern of the time. Fieldcrest recreates this surprisingly contemporary-looking design in a bedspread and matching towels. Both in brown, navy, green; bedspread also in red.



HEMPFIELD RAILROAD • When the railroad hit town, it was an event to be celebrated. In 1851 a weaver in what is now Wheeling, W. Va., made a coverlet to commemorate the building of the "Hemfield" Railroad. Fieldcrest has copied his locomotive design—and misspelling—in towels (gold, blue, red) and a bedspread (blue only). Locomotive in picture is from the Smithsonian's collection of train models.

PRINTING BLOCK ROSE • A delicate pattern taken from a set of embroidery stamping blocks. Widely used from the 1850's to 1870's, these blocks enabled individuals to stamp their own designs on their own cloth at home. Fieldcrest recaptures the resulting look in no-iron sheets and a comforter.

You don't just build a model. You create a moment.

If you've ever built a model car, you probably put it on a shelf when it was finished.

And no matter how realistic the model looked, somehow it didn't look right on your shelf.

That's because real cars don't park on shelves.

They park on streets. And planes fly in the air. And trains pull into stations.

And that's what the Tonka Dioramas™ are all about.

You don't just build The 1913 Model T Ford, you build the 1913 street scene where it used to park.

You don't just build The Wright Flyer, you build the site near Kitty Hawk where it took off.

And so on with The Spirit of St. Louis and Le Bourget Field, The Pioneer Locomotive and the Chambersburg, Pa. train station.

They're easy to build, yet they won't bore you if you're an old hand at modeling. Because there's a lot more to them than just making a model.

There are things to paint, a background to assemble, plus a terrific looking display case to put together.

And they're the only hobby kits that are authenticated and approved by the Smithsonian Institution, one of the leading authorities on America's heritage. So they look like the real thing.

So try one. Create a moment in time and space. And you'll be creating something that really resembles reality.

After all, isn't that the whole point in modeling?

Tonka Dioramas™

As real as you can get.

Authenticated and approved by the Smithsonian Institution.

MANUFACTURED BY TONKA TOYS, A DIVISION OF TONKA CORPORATION

Smithsonian products available by mail.

The products shown on the preceding pages are available by mail from the Smithsonian Museum Shops. Smithsonian Associates are entitled to a special membership discount of 10% on their purchases.

The Stieff silver and pewter reproductions shown in this supplement are currently in the final stages of development and will be available after January 1, 1975. In addition to those items pictured, there will be a replica of a silver plated wine coaster used by George Washington, a funnel, and a spouted measure. Please check the attached reply card for more information.

Tonka Dioramas

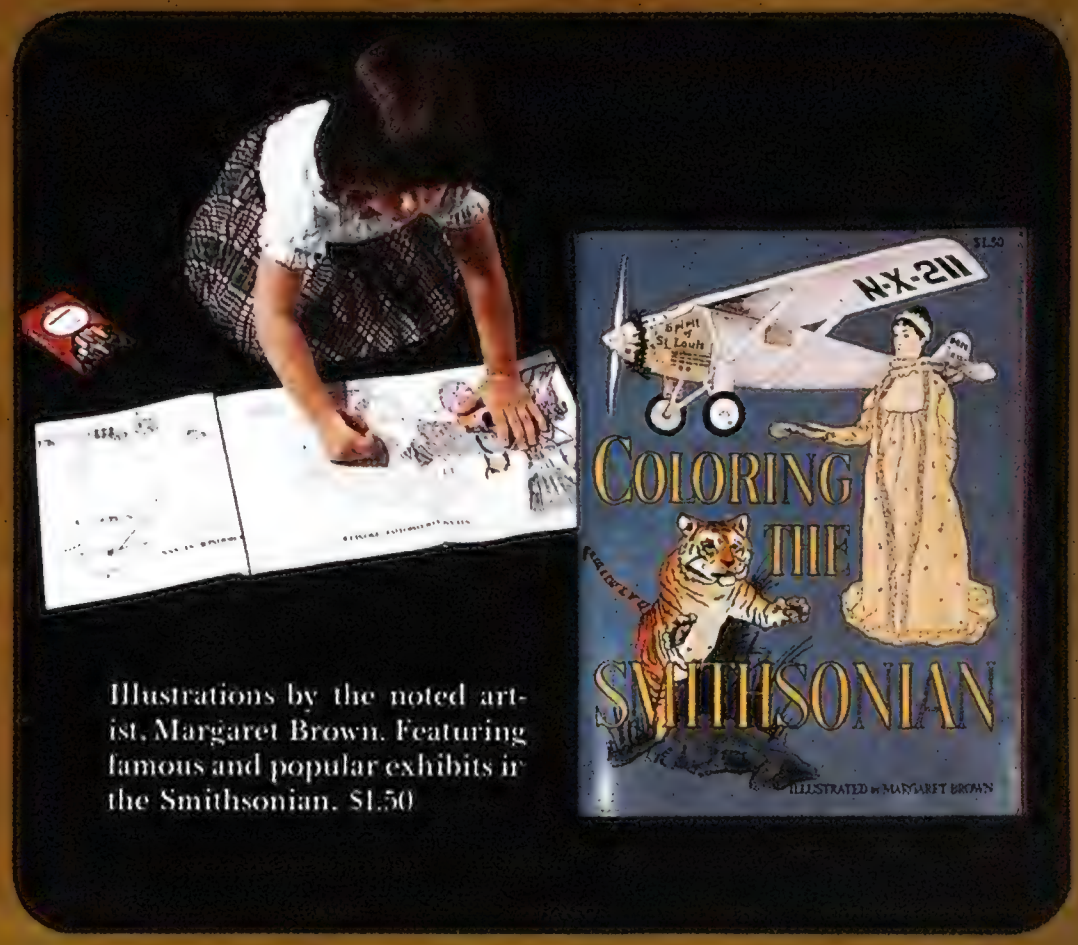
An ideal gift for young people (over 10) and adults. Eack kit is molded in authentic colors and includes a contour base, background, plastic display case with window and skylight, 24 page booklet, complete instructions and display guide. $18.00 each.

No. 7015—Railroading in 1853, The Pioneer Locomotive
No. 7013—1913 America, The Model T Ford
No. 7011—Moment of Flight, The Wright Flyer
No. 7014—Landing in Paris, The Spirit of St. Louis

ALVA
MUSEUM REPLICAS

USM-71N	Heavenly Happiness Pendant	$ 8.50
USM-71P	Heavenly Happiness Pin	7.50
USM-72N	Double Happiness Pendant	8.50
USM-70N	Stylized Butterfly Pendant	12.50
USM-70P	Stylized Butterfly Pin	10.00
USM-81	Egyptian Sacred Eye Ring	7.50
USM-66N	Chilean Silver Pendant	7.50
USM-66ES	Chilean Silver Earrings, screw back	7.50
USM-66EP	Chilean Silver Earrings, pierced	7.50
USM-67	Trading Cross	8.50
USM-68	Russian Amulet Cross	12.50
USM-79	Sea Captain Sculpture	50.00

perhaps the most unusual coloring book ever published!



Illustrations by the noted artist, Margaret Brown. Featuring famous and popular exhibits in the Smithsonian. $1.50

Please turn page for more Smithsonian Products

Fieldcrest

AMERICAN TREASURES

PATIENCE ROSE

Sheets—		
4722	Standard Case	$8 pair
4724	Bolster Case	$9 pair
4768	Twin Flat	$9
4752	Twin Fitted	$9
4784	Full Flat	$10
4766	Full Fitted	$10
4793	Queen Flat	$14.50
4760	Queen Fitted	$14.50
4794	King Flat	$18.50
4796	King Fitted	$18.50
Blankets		
11056	Twin	$21.00
11058	Full	$24.00
11050	Queen/King	$33.00
Comforters		
22020T	Twin	$50.00
22020	Full	$65.00
22020H	Queen/King	$90.00
Towels		
4647	Bath	$4.00
4247	Hand	$2.50
4147	Washcloth	$1.25

DOUBLE BOWKNOT

Bedspread (in brown, green, navy or gold)		
57120T	Twin	$42.00
57120	Full	$48.00
57120Q	Queen	$60.00
57120H	King	$68.00
Towels (in brown, green, navy or gold)		
6646	Bath	$6.00
6246	Hand	$3.25
6146	Washcloth	$1.50

HEMPFIELD RAILROAD

Bedspread (in brown, green, blue or gold)		
57020T	Twin	$70.00
57020	Full	$80.00
Towels (in gold, blue or red)		
6648	Bath	$5.00
6248	Hand	$3.00
6148	Washcloth	$1.35

PRINTING BLOCK ROSE

Sheets		
3122	Standard Case	$8 pair
3124	Bolster Case	$11 pair
3168	Twin Flat	$9.50
3152	Twin Fitted	$9.50
3184	Full Flat	$10.50
3166	Full Fitted	$10.50
3193	Queen Flat	$15.50
3160	Queen Fitted	$15.50
3194	King Flat	$19.50
3196	King Fitted	$19.50
Comforters		
21920T	Twin	$65.00
21920	Full	$95.00
21920H	Queen/King	$120.00
21920	Pillow Sham	$15.00

PATIENCE ROSE

DOUBLE BOWKNOT

HEMPFIELD RAILROAD

PRINTING BLOCK ROSE

Mail to:

Smithsonian Institution
Museum Shops
Room NHB-102A
Washington, D.C. 20560

My Name _____

Street _____

City _____

State _____ Zip _____

ORDER FORM

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Smithsonian Institution Museum Shops

Quantity	Catalog No.	Description (and color if applicable)	Price

Merchandise Total

Less 10% Associates Discount

Plus Postage and Handling $1.50

Total Amount

Date _____

☐ **Check enclosed in amount of**

Charge my ☐ Master Charge ☐ Bank Americard ☐ American Express

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☐ Please send me information on other Fieldcrest products based on the collections of the Smithsonian

☐ Please send me information on **Stieff** products when available.

Detach here for ready reference and your record of order.

Make your reservations now for 1975

Travel Benefits for Smithsonian Associates

Ever since the establishing of the Smithsonian Associates it has been the purpose of the Smithsonian to present a travel program which met the needs of the membership. From the very first a superb foreign study program, under the direction of Dr. Richard Howland, an authority on architectural history and special assistant to Secretary Ripley, was available to Associates. In 1968, Domestic Study tours, strategically spotted all across the country, were created.

Now, as you have read on page 89 of the August SMITHSONIAN, a new travel benefit has been added to the existing Foreign and Domestic Study Tours, which shall continue with undiminished performance and quality.

The reason for adding this new travel benefit was compelling: More members mean more tours—and bigger tours.

What is the same and what is different about these new tours?

What is the same is that the participants, *you,* are the same. From all the surveys, from all the letters, from all the telephone calls, from the experience of meeting you on all the tours that have been conducted so far, the conclusion is inescapable: you are a unique community drawn together by your interest in the subjects that have been treated in the SMITHSONIAN magazine. You are lively, inquisitive, stimulating and eager to broaden your intellectual horizons and to keep growing mentally.

What is also the same is the Smithsonian sponsorship. This means that there will be a Smithsonian character to all Smithsonian tours; whether the tours will be the Foreign and Domestic Study tours (small-group, specialized, intensive) or whether they will be the Foreign Charter Tours (larger-group, lower-cost).

All of this adds up to broader prospects for Smithsonian Associates: A tour for every season; a tour for every taste; a tour for every purse.

FOREIGN STUDY

Egypt and Ethiopia—January 4-26: Ancient monuments and sites (waiting list only) ● **Ancient Sites of the Maya**—January 11-30: *Argonaut* yacht cruise from Montego Bay to British Honduras, Guatemala and Yucatán. Return by air via Mexico City ● **The African Quest**—February 14-March 25: Fly to Tanzania and board the *MTS Apollo* at Dar es Salaam; circumnavigate Africa to Dakar calling enroute at fabulous ports of call; cruise up the Congo River ● **Australia and New Zealand**—March 14-April 8: Flora, fauna and anthropology, via Tahiti and Fiji ● **Northern Spain and Southern France**—May 13-June 4: Cave paintings and the art of Paleolithic man ● **Classical Greece**—June 10-July 2: Archaeological sites in central Greece and the Peloponnesus ● **Copenhagen to Lisbon**—August 23-September 14: *Argonaut* cruise with stops at major European ports ● **Russia**—September 20-October 4: Art and architecture ● **Hawaiian Islands**—November 8-21: Petroglyphs and natural history ● Write **Miss Bliss Schumann, Foreign Study Tours, SI 123,** Smithsonian Institution, Washington, D.C. 20560.

FOREIGN CHARTER

Great Britain—May 1-15 or Sept. 25-Oct. 9: The National Gallery, Tate, Victoria and Albert; walking tours of literary London and excursions in the countryside ● **Russia**—May 8-22, May 21-June 4, October 2-16 or October 16-30: The Bolshoi Ballet, Moscow Circus, Hermitage; schools, factories and hospitals in Moscow, Leningrad and Kirov ● Write **Robert Angle, 1000 Jefferson Drive,** Smithsonian Institution, Washington, D.C. 20560.

DOMESTIC STUDY

Florida Everglades—November 10-15: Birds and tropics in Corkscrew Swamp Sanctuary, River Valley and Everglades National Park ● **Christmas at the Smithsonian**—December 6-8: Behind the scenes of Smithsonian museums, including the newly-opened Hirshhorn; spectacular poinsettia display in the U.S. Botanic Gardens; and an old-fashioned tree-trimming party ● Tours in 1975 include a January Yankee weekend in **Old Sturbridge Village, Massachusetts;** a snow-covered trip to **Yellowstone National Park in February;** and a whale watch along **Baja Peninsula** ● Write **Domestic Study Tours, SI 106,** Smithsonian Institution, Washington, D.C. 20560.

The most comfortable shoes you've ever worn or your money back!*

Norm Thompson's Sko-Slip... genuine boarhide in a classic, moccasin style slip-on.

We honestly believe this well-designed loafer is the most comfortable, long-lasting shoe of its kind. It'll fit snugly, stay in shape, and hug your heels while it delivers the basic good taste that's made it one of our most popular styles.

Boarhide . . . a tough guy tamed!

Natural boarhide . . . soft and amazingly durable.

The small scars you'll notice on your Sko-Slips were not put there by the factory workers. The wild boar did it himself during the course of a rough-housing career in some mighty rugged country. We like to call natural boarhide "the Jekyll & Hyde of shoe leathers." One part of its split personality is soft and supple . . . the other is tough and rugged. We're not quite sure how boarhide gets this way, but it's one heckuva combination to beat for comfort and long wear.

A natural, breathing leather that's virtually waterproof.

Boarhide has a tendency to "breathe" due to a unique tanning process that removes the stiff bristles leaving a porus surface. Your feet stay cool, dry, and just plain comfortable. What's more, boarhide resists moisture and sheds soil better than any other natural leather we've seen or tested. It's almost immune to scuffing and an occasional treatment with saddle soap will keep the handsome pebble finish looking neat and new.

Fully lined with glove-soft leather.

Inside your Sko-Slip you'll experience the luxurious comfort of supple calfskin plus a special, non-curl leather insole. A custom rubber heel and an all-leather sole are bonded to the Sko-Slip using the famous Goodyear welt and Allen Edmonds single-stitch, no-nails construction. It's all combined in a lightweight shoe that flexes with every step you take.

***The most comfortable shoes you've ever worn or your money back!**

As with all Allen Edmonds shoes the emphasis is on comfort — so much emphasis that we make this amazing guarantee: Wear your new boarhide Sko-Slips for two weeks. If, for any reason, they aren't the most comfortable shoes you've ever worn . . . simply return them to us, postage prepaid, and we'll refund your money in full.

Color: Briar tan. **Price: $39.00 ppd.**

The Sko-Slip . . . classic moccasin styling and honest comfort.

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Order TOLL FREE anytime 800-547-6712 (excluding Oregon, Hawaii and Alaska)

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Signature X_____

	Size													Width
Sko-Slip														
	7	½	8	½	9	½	10	½	11	½	12	½	13	14
AAA					x	x	x	x	x	x	x	x	x	x
AA					x	x	x	x	x	x	x	x	x	x
A			x	x	x	x	x	x	x	x	x	x	x	x
B		x	x	x	x	x	x	x	x	x	x	x	x	x
C	x	x	x	x	x	x	x	x	x	x	x	x	x	x
D	x	x	x	x	x	x	x	x	x	x	x	x	x	x
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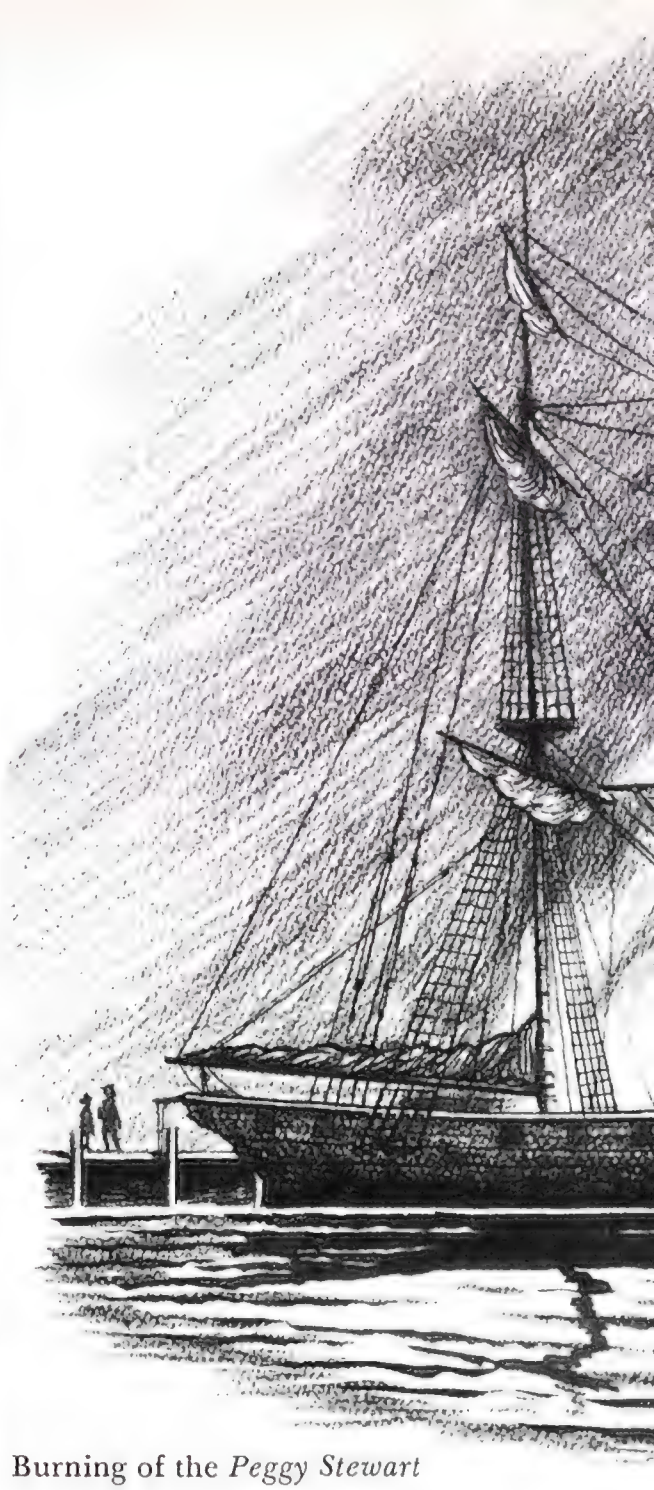


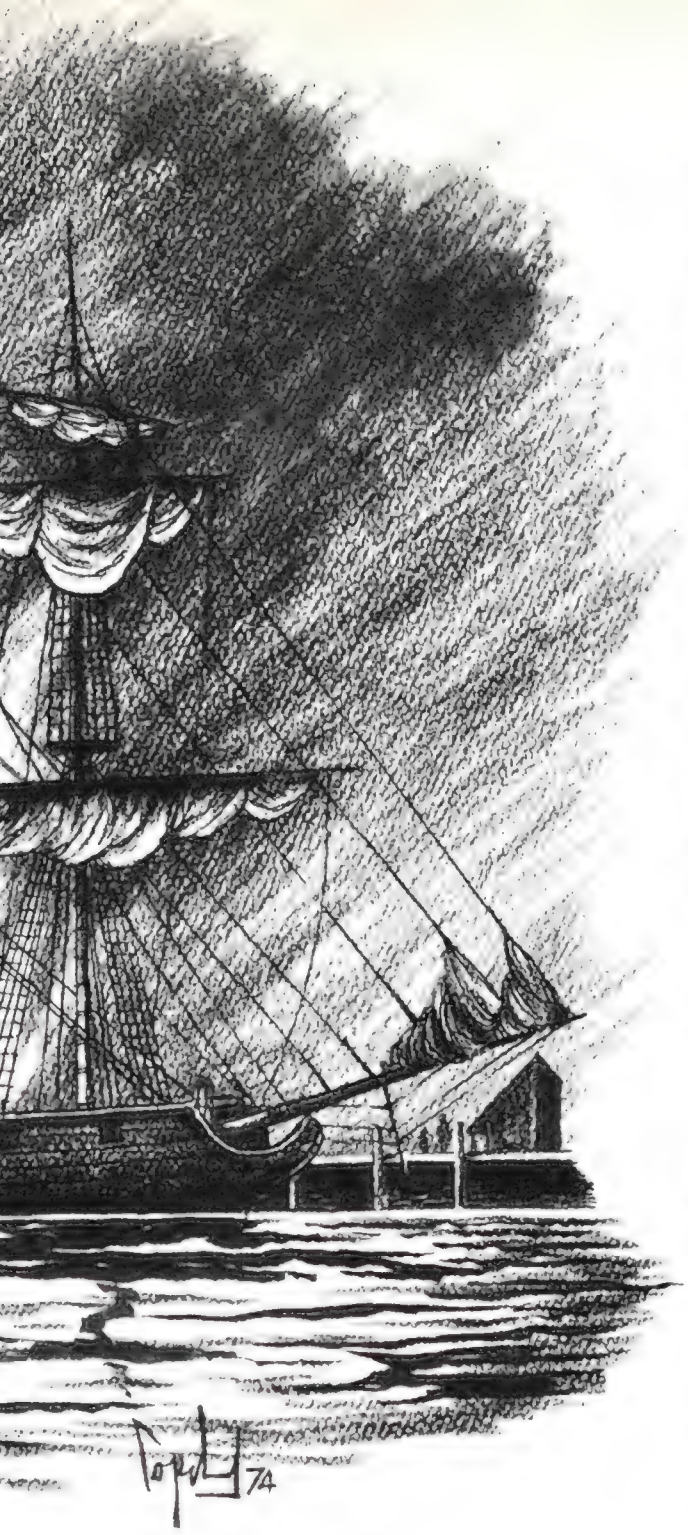
Burning of the *Peggy Stewart*

200 years ago this month

Aroused mob, a force to be reckoned with

October 1774

As always happens in October, the weather turns lovely and distracts the minds of important people from their complaints, their duties, their plans. As



the summer heat goes out of Carpenter's Hall in Philadelphia and the fall crispness touches the building, delegates to the Continental Congress think of their homes and hurry their work in order to return to them—to gun for ducks in Rhode Island, to climb along the Palisades above the blue Hudson, to slip past the rice paddies of the Cooper River, outside Charleston, in a punt, or to gaze at the flaming foliage of the New Hampshire hillside maples.

The delegates glance at the bright sunlight outside the windows, then bend to their work, guilty as schoolboys caught a-dreaming. They read and adopt a Declaration of Colonial Rights and Grievances which defines limits on Parliament's authority to regulate trade—and then only by consent of the Colonies. They write up their position to be distributed, and on the 26th of this month they adjourn. They will meet again, they decide, in May 1775.

And so these farsighted, concerned gentlemen step, blinking, out into the American world and rejoin the daily life of the Colonies. With their wealth, talents and education, they comprise a tiny upper crust of society. Above them is an even thinner layer of the Royalist rich—people whose fortunes are tied closely to Britain and its government. Below them is a swarming mass—mechanics and day laborers, small craftsmen and shopkeepers, sailors and fishermen, farmers and frontiersmen, indigents, lunatics, prostitutes, criminals. And below these are indentured servants, and below all are slaves. Yet there is democracy at work. The slave can be freed, can become a craftsman, can end up owning property. The wealthy lawyer, similarly, may possibly drink himself into the gutter.

But the lines are pretty well drawn, and, to the delegates immured in Philadelphia for 50 days, it is almost bewildering to read the mood of the great, turbulent mass of American people. It's not that these nameless hordes scream lustily for independence from Mother England, or even read the tracts that circulate with fresh statements of grievances. But they have witnessed an action against vested authority—the dumping of tea in Boston—and they relish every opportunity to hot up the pot a little more.

Led by the ubiquitous Sons of Liberty, the poor and benighted in every Colony have harassed Tories, setting their homes aflame and even indulging in the horrible and often fatal practice of tarring and feathering them. Whenever tea appears in a ship's hold, the mob, inspired by the Sons, reacts with violence. There was a small New York tea party in April. There is a similar move afoot in Charleston. Now, in October, the brig *Peggy Stewart* arrives in Annapolis with more than a ton of tea consigned to a local importer. To get the rest of his cargo ashore, the vessel's owner pays the tea duty. He is immediately threatened. His captain and the consignee profess innocence: They knew nothing about that bit of cargo, honestly, now.

But a letter has arrived from London and obviously been "leaked." It is from the British partner of the largest mercantile firm in Annapolis. He tells of hearing

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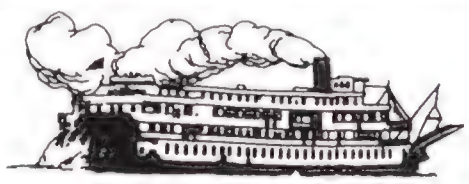

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DELTA QUEEN
VOYAGES to AMERICA

"a hint" that there is tea aboard (disguised in the manifest as linens) and says, "I should not be surprised to hear that you made a BonFire of the Peggy Stewart. . . ."

Bonfire it is. The owner sets fire to her himself while the mob cheers, and she goes up in a great blaze that lights the little harbor and the hard faces that line it (pp. 32-33).

The brig is burned a week before the Congress adjourns. It is a sobering thought for these gentry, with all their high-minded theories and legalities about the proper status of Colonies under the Crown, that a great horde of unthinking illiterates can be so easily manipulated. The debating and philosophizing about freedom from parliamentary oppression, about loyalty to the King, is the work of that thin crust of leadership—genteel and even intellectual. But the fine talk can very well lead to brutal action. And that is the province of the uncaring nobodies who roam every street.

Out on the frontier, the illiterates are showing what they can do with rifles and targets. Lord Dunmore's War against the Shawnees and their Indian allies has sputtered all summer and now is put out by a long and bloody battle. Dunmore takes command of a large levy of buckskinned hunters, splits them into two forces of about 1,500 men each, and arranges to bring them together at the confluence of the Ohio and Kanawha rivers—a place called Point Pleasant. But Dunmore's own group misses the rendezvous and is still some miles away when the second force, commanded by Andrew Lewis, one of the western Virginia family of frontier soldiers, is suddenly confronted by the warriors.

A frontier battle is a strange, rather informal affair—a great deal of skulking and rather careful shooting, both with Indian bows and the slender rifles made in Pennsylvania by German and Swiss gunsmiths especially for the frontier trade. The redskins are painted and adorned for battle; the whites wear buckskin shirts —tan, bleached, sometimes dyed red—homespun woolen leggings, moccasins, soft caps of fur or wool. There is much jeering and shouting of obscenities by both sides—all part of the game. But the casualties are no game—more than 40 dead frontiersmen, including Andrew Lewis' brother Charles.

At the end, the Indians draw away and quite freely admit defeat. And the great chief, Logan, the slaughter of whose relatives back in the spring aroused the tribes, writes a sobering letter to Lord Dunmore, for he is too proud to visit him in defeat. It is translated literally by a trader and read to the governor:

"I appeal to any white man to say if ever he entered Logan's camp hungry and he gave him not meat; if ever he came cold and naked and he clothed him not?" He goes on about his peacefulness and then relates the story of the massacre, "not even sparing my women and children. . . . This called on me for revenge. I have sought it. I have killed many. I have fully glutted my vengeance. . . . I rejoice at the beams of peace; but do not harbor a thought that mine is the joy of fear. Logan never felt fear. He will not turn on his heel to save his life. Who is there to mourn for Logan? Not one."

The frontiersmen are a little disturbed by the letter—so very Indian, and so eloquent. Somehow it doesn't seem right that savages express themselves so well.

They shoulder their rifles and march away from Point Pleasant while the foliage brightens around them. They are a large and lethal part of that strange, unpredictable Colonial weapon, the Great Unwashed Mob.

Of course there is another part of this turbulent class, for America is far more than coastal cities and mountainous frontier. On thousands of small farms in all the Colonies there dwell strong, stolid, capable families, uncomplicated, generally unlettered except for a little Scripture, uncommitted politically. They comprise the unknown factor, for they may align themselves with or against the King —or simply stay neutral.

In England, the common folk touch their forelocks when Squire whirls by in his coach. In France, they stand aside when Marie Antoinette passes on her way to a ball. In Russia, those who took part in the Peasant Revolt are soundly thrashed by Catherine the Great's soldiers. And in America, they are a great strength and worry, both to the high-and-mighty officials of King George and to the leaders who are rebelling against him. The delegates leave Philadelphia, more thoughtful than ever.

EDWARDS PARK

Next month: Learning to soldier

1914, A FRAGRANCE CREATES DEEP, DEEP MEMORIES.

Guerlain introduced a perfume named for the twilight, L'Heure Bleue. Now the skies darken and the Western World is swept into the forces of The Great War...

A weary French officer finds a moment of peace. He pulls a letter from his tunic and inhales the fragrance lingering in the worn pages.

It is the fragrance she wore the last night they spent together. L'Heure Bleue, named for that moment when the sky has lost the sun but not yet found the stars.

He reads the letter for the hundredth time...

L'HEURE BLEUE
by Guerlain

He wants oil without oil spills. So do we.

Meet Walt Welles, conservationist, former navigator on an oceanographic schooner. Loves the sea. Worries over what man might do to it. Hates oil spills.

But he also likes what petroleum does for his enjoyment of nature. Quick-drying sails made from petrochemical feedstocks. A maintenance-free fiberglass hull, also petroleum-derived. An auxiliary engine that couldn't go anywhere without diesel fuel.

So he wants conservation—plus adequate supplies of petroleum. Which, to Walt Welles, is simply a matter of realistic trade-offs on conservation issues involving oil.

Offshore drilling? "Yes, within reason," he says. "I certainly don't want to look at nothing but oil wells when I put to sea. But I'm told a single production platform today does the job of many earlier ones." We could also tell him some of our plans for the future, like producing oil on the bottom of the sea. In many cases with no visible platforms at all. This new system is being tested right now.

As to building deepwater ports to handle very large tankers: "I'm excited, as a conservationist, that crude oil could be unloaded at a buoy 10 or 20 miles out to sea, then carried by submarine pipeline to storage tanks ashore. That means fewer vessels in our ports. Fewer risks of collision and oil spills. And no need to dredge our harbors, damaging the eco-system."

It also means that we'd be able to handle our imported crude oil in the most economical way.

"The trick," Welles says, "is to make the ocean work for all of us. Yield her fish *and* her oil. Without messing up the critical balance of nature. Or the beauty we all love."

Well said, Walt. We couldn't agree more.

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Alaska embarks on its biggest boom as oil pipeline gets under way

With sky darkened by a snowstorm (common in spring and fall), a team of workers is trying to work on rig at Prudhoe Bay, site of largest oil strike in U.S. history and subject of a six-year dispute.

In this once and future promised land, the oil rigs and hard hats spring up like tundra flowers amid wealth and ecological concern

Text by Richard Corrigan

Photographs by Don Carl Steffen

A welding inspector on the trans-Alaska pipeline told one of those good news-bad news stories.

God appeared before Moses, the story went, and said that first He had some good news: God would lead the chosen people out of bondage, lay low their enemies, part the waters of the sea and deliver them to the promised land.

And the bad news? "You," God told Moses, "will have to write the environmental-impact statement."

The story is a natural for Alaska, where a long-stalled oil boom is under way after extensive guesswork as to what the environmental and economic impact of the trans-Alaska pipeline would be. Now that construction work on the pipeline is reaching an all-out pace, the impact can be seen, touched and smelled —although no one has yet invented a way to measure it. What can be said is that Alaska is, for better or worse, being propelled into a new era, and that the promised land either lies ahead or may already have been lost.

Here are some scenes of the development under way:

• At the Fairbanks airport, fat-bellied Hercules cargo planes rumble into the bright summer sky through the day and night, hauling supplies north. Along the roads around Fairbanks, spruce trees are shoved back to make room for new truck yards, welding shops, warehouses. In town, drifters lurch down the sidewalks, castaways of the bonanza.

Strong men wrestle with oil drill: High pay, 12-hour shifts and brawn are keys to so vast an enterprise.

The controversial geography of Arctic oil and gas: trans-Alaska oil pipeline (blue) will run from Prudhoe Bay to Valdez, with tanker transport south to U.S. West Coast. Future natural gas pipeline could take same route (dotted red line). Among other gas pipeline proposals is a Canadian route which would pass either through or below a wildlife refuge in northeast Alaska, on to existing Canadian pipelines and eventually serve, in part, a vast market in the midwestern part of the United States.

Only a handful of people have ever crossed the Brooks Range by land; in 1978, pipeline will bisect the mountains through Dietrich Valley, above center.

• On the banks of the Yukon River, pile drivers hammer steel supports into the riverbed to prop up a half-mile-long bridge. The bridge will carry traffic—and, above the deck, suspended in the superstructure, the pipeline itself.

• At Prospect Creek camp in the foothills of the Brooks Range, a frazzled construction boss in a green hard hat complains about overworked generators and overworked sewage-treatment tanks and about all the new equipment that should have been ordered long ago. Asked whether men will want to work at the camp when cold weather sets in, he says, "The first big snowstorm, they won't have enough planes to fly 'em all out."

• Cruising through the Brooks Range in a small, two-engine plane, with mountains rising above the wingtips and more mountains looming dead ahead, a visitor can look down on the highway being blasted and scraped out of the earth. Every few minutes, the plane passes over yet another gravel pit, a man-made crater from which gravel is excavated by machines to form the bed for the roadway.

• At Prudhoe Bay on the North Slope, site of the record-setting 1968 oil strike, a British-Petroleum PR man in white hard hat and white turtleneck acts as tour guide for VIPs from the natural gas industry. "We've got 72,000 square miles of nothing out here," he says of the flat, lake-dotted oil field, and, as the bus approaches the new BP-Sohio base camp, says, "This is probably the most exciting thing on the Slope." The showcase camp, built like a space station to defy its hostile surroundings, offers a sauna, a swimming pool, canned music in the rest rooms, a glass-enclosed exercise yard with artificial turf, and a hothouse garden of transplanted spruce and birch.

Such is the impact of the pipeline project which, at the last estimate, is expected to cost $4.5 billion, and it is not confined to the natural environment. Indeed, the land may accommodate the pipeline with less strain than the people.

When Alaskans talk about pipeline impact, they talk about tied-up telephone circuits, streets immobilized by out-of-state vehicles, the scarcity of housing, the high cost of everything, the squeeze on goods and

Mr. Corrigan, of the Anchorage Daily News, *is also a consultant on energy for the Ford Foundation. Mr. Steffen made three trips to Alaska for these pictures.*

services, the outsiders who are moving in, grabbing the best jobs, cluttering up the state.

"What attracted a lot of people here was that it was *unlike* other states," said Joe E. LaRocca, a sad-eyed veteran reporter who now directs the pipeline impact office of the Fairbanks North Star Borough. LaRocca figures the population of the city has grown by nearly 9,000 this year, to a total of about 31,000, and next year "the full burden will descend upon us."

On the positive side, some Alaskans talk about the advantages of being in on a boom.

"I named the other night in an hour 55 local people who have made a million dollars out of real estate alone in the Anchorage area," said Sewell Faulkner, president of an Anchorage real-estate firm. "Alaska's going to be the place," he said. "And there's only 340,000 or so people here to share all that wealth—women, children, natives, everybody."

Alaskans also talk about the state's very real needs for better housing, health care, education and communications systems. In its days as a territory, and even during its first years of statehood, Alaska was little more than a ward of the federal government. Without the oil boom, Alaskans ask, what future would the state have?

Alaska's experience with the pipeline will be of national importance, since the state is being looked upon as a storehouse of energy and minerals to serve the rest of the country.

When the proposed pipeline was just a north-south squiggle on a map, many of its advocates used to say that you would hardly notice the thing once it was put together; that the pipeline would just be a steel ribbon curling through 800 miles of desolate tundra, mighty mountains and spruce forests. Others said the risks looked far too great, that the pipeline could do irreparable harm to the nation's last frontier.

In 1973, as the energy crunch hit the country, Congress settled the dispute—with the administration's blessing—by directing that construction of the pipeline be authorized and by foreclosing any further litigation under the National Environmental Policy Act. The permits were duly issued early this year, flashing the signal that the boom was at hand.

The dimensions of the project were outlined in a recent talk by Charles L. Elder, executive vice president of Alyeska Pipeline Service Company, the seven-company consortium building the line. Elder stressed the six-year gap between the discovery of the oil and the start of construction. "Somewhere in here there's a lesson to be learned," Elder said, "but we're too busy to learn it."

He continued: "Our plans are that we will be loading tankers at Valdez in the third quarter of 1977." Workers will be deployed in 23 pipeline and road construction camps. The pipeline will start pumping oil at the rate of 1.2 million barrels a day, later gearing up to 2 million barrels a day.

At the port of Valdez, the southern terminus of the pipeline, 44 storage tanks, each with a capacity of half-a-million barrels, will be installed.

Some lessons learned

The major objective this year was to put through the 360-mile road from Prudhoe Bay to the Yukon River and to clear a right-of-way close to existing highways down to Valdez. Later will come the stitching together of the 48-inch-diameter sections of steel pipe. In some areas, the pipe will be buried; in some regions of ice-rich permafrost, it will be elevated, or set on gravel beds in Arctic river systems.

The original design was not so well tailored to Arctic conditions. "It wouldn't have just been an environmental disaster," Walter J. Hickel said in an interview, "it would have been an engineering disaster." Hickel, who was Secretary of Interior in 1969-70, said the oil companies brought a "temperate-zone mentality" to Alaska, reckoning that what they had done in Oklahoma they could do just as well in Alaska. It took some time, he said, to educate the oilmen about the real dangers of burying a hot-oil pipeline in the unstable permafrost.

Even now, it appears that decisions will be made on a section-by-section basis as to where the pipeline will be elevated. Frank R. Fisher, environmental protection manager for Alyeska, had no ready answer when asked how much of the pipeline north of the Yukon would be elevated.

The hazards of operating on permafrost can still be seen at Prudhoe Bay, where deep ditches illustrate the way permafrost, once cut open, can melt and erode.

"This is the way we used to operate, back in '68 and '69," visitors are told. An indentation of only a few inches from the tire pressure of a vehicle moving over the tundra in summer will give sufficient protection from the constant wind to raise temperatures in the slight depression enough to melt the permafrost a few extra inches every year, until, as some of the scars on the North Slope now illustrate, melting and erosion can combine to produce eight-foot deep gullies in a matter of a few years.

In earlier days, to make a road, bulldozers scraped aside the tundra down to the permafrost and trucks traversed the Arctic. Traffic stopped when melting turned such roads into swamps. Now, bulldozer blades don't touch the tundra. Right on top of it, belly-dumpers drop loads of 33 yards of gravel, building the road up to five feet above the tundra. After the first winter, the permafrost has not melted, but rather has frozen upward another three feet into the roadbed, making all-year-round travel and construction possible in the Arctic. This technique is the one of choice for all construction of roads, drill pads, airstrips and living quarters.

Where the line is buried in permafrost, there will be special problems. When the permafrost has a high ice content, high oil temperatures could cause a "thaw bulb" leading to possible subsidence or shifting of the soil and perhaps to rupture of the oil line. In such areas of unstable permafrost, the pipeline will be refrigerated with a circulating flow of saline solution to prevent melting.

Bridgehead at the Yukon: To be completed next year, span will carry traffic below and pipe overhead.

Since water would freeze as it comes out of nozzle, a steam hose is necessary for cleaning dust off truck.

Bulldozer rears up over the tundra, linking sections of gravel roadbed that lie atop the permafrost.

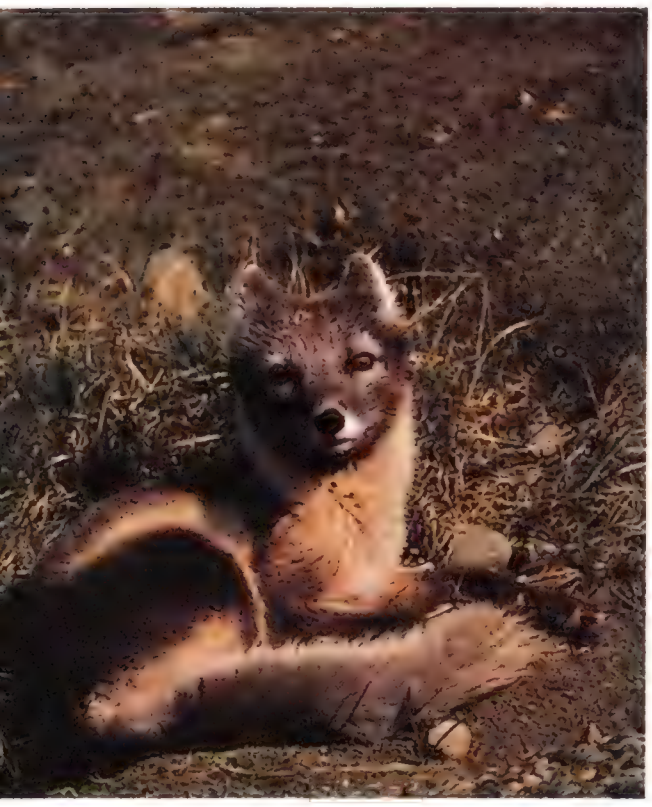
The raised portions of the pipeline are intended for migrating caribou to pass through, but no one is certain the caribou will use these gateways. As photographer Don Carl Steffen reported: "So far the caribou seem to accept man and his structures. There are billions of mosquitoes and black flies on the North Slope, one attraction for the vast numbers of birds that summer there. At times, especially when the temperature is high—it reached 75 degrees Fahrenheit on July 24 this year—these hordes of insects literally drive the caribou racing pell-mell across the tundra, milling in circles, fleeing to the gravel islands in riverbeds to escape.

"On the five-foot elevation of the roads, drill pads and airstrips, the cold breeze blowing in off the Arctic Ocean chills the mosquitoes' ardor, and the caribou can have a moment of peace. That is why on the pads for the two airstrips, Dead Horse and Prudhoe, the herds are sometimes hazards to aviation. Sometimes trucks are sent out to drive them down off the strips so planes can land, but the caribou, like waves after a boat, mount immediately to the strip as the truck passes. So men have to be dropped every few yards from the truck to keep the animals down on the tundra while planes land.

"On the North Slope, 18 to 20 pairs of birds nest per square mile. Construction has not seemed to affect them. Indeed, a hundred yards from the main spine road, two pairs of swans nested this summer, honking raucously at any vehicle which stopped to look or photograph. The five-foot-high gravel roads are kept clear of snow in winter by wind and plowing. They thaw and dry first in the spring, and great clouds of dust from them settle on the adjacent snow, drawing heat and melting it weeks earlier than normal. The resulting roadside ponds are festooned with birds earlier than usual, leading to earlier mating and nesting. It remains to be seen whether this change in timing is

Caribou plunge into frigid Arctic water near Prudhoe camps to gain respite from omnipresent mosquitoes.

Undeterred by Man's proximity, a wolf goes about the menacing business of circling a goose.



This fox took advantage of construction by living at the base of the new roadbed. Whistling swans honked haughtily at observers stopped on the road. Bears frequent pipeline route in Brooks Range.

good or bad for birds that have evolved intricate migratory patterns."

To reach its 1977 deadline, Alyeska expects its work force to swell to a peak of about 14,000 by next year. Most of the jobs are dispensed by unions, which banded together to negotiate a Project Labor Agreement with Alyeska. Alyeska sought, and won, a no-strike clause in the union contracts. In return, the unions received guarantees of sky-high wages. You hear talk of dishwashers making $6 or $8 an hour, of heavy-equipment operators getting as much as $1,500 a week.

To cash in on this is no easy thing, however. The men who work on the line—and the few women who are stationed here and there—work 10- and 12-hour days, 6- and 7-day weeks, in 9- to 13-week stints. And to get assigned to the pipeline at top priority takes a coveted "A" listing at the union offices. Competition —at least during the summer—has been stiff, with out-of-state union members who have the right skills and/or connections beating out Alaskans for many jobs. Camp life offers few attractions, even at the showcase camps that look, on the inside, more like motels than they do like barracks.

"Who needs 11 oil pipelines across Alaska?" asked one of Alyeska's member companies in a recent newspaper advertisement. "Nobody, obviously," answered the ad, the point being that it was better to have one trans-Alaska pipeline built by a joint venture than to require each lease-holder on the North Slope to build its own.

Whatever the Federal Trade Commission might say about such partnerships among alleged competitors, the question posed by the ad has a real bearing on Alaska. The trans-Alaska oil line may well be the first of several. Mixed in with the oil beneath the North Slope is a large supply of natural gas. The amount is estimated at 26 trillion cubic feet, more than the United States consumes from all sources in one year.

During the controversy over the oil line, it was assumed that the natural gas might be piped overland through Canada and into the Midwestern states. Among the critics of the proposed oil pipeline, many argued that the oil should be routed across Canada to avoid some of the hazards associated with the trans-Alaska system and to dispense with the need for oil tankers in the Gulf of Alaska. After all, the critics said earlier, the gas is going to move across Canada, so why not move the oil the same way, and confine the environmental impact to a single corridor?

This argument now has been seized upon, with a reverse twist, by the El Paso Natural Gas Company. El Paso wants to build a natural gas pipeline across Alaska, alongside the oil pipeline, and then liquefy the gas, move it aboard a fleet of special tankers and transport the energy to California.

El Paso is challenging a powerful consortium called Arctic Gas, which claims 27 American and Canadian sponsor firms. The contest will first be thrashed out before the Federal Power Commission and might eventually be settled by Congress. And of course the Canadian government will have a say: Prime Minister Trudeau has recently stated his government's reservations about a Canadian route.

One of the drawbacks of the Arctic Gas system, in the eyes of environmental organizations, is that the pipeline would run east-west across the Arctic National Wildlife Refuge in the northeast corner of Alaska before reaching the Canadian border. The caribou migrate north-south by the thousands in the refuge, and a pipeline corridor would, it is said, disrupt not only the caribou migration, but also the life-

The North Slope's only trees thrive in opulent BP living quarters, along with the human imports.

patterns of 140 species of birds. Arctic Gas says it will bypass the refuge if it has to.

The State of Alaska has endorsed the trans-Alaska gas line idea in hopes of attracting more construction jobs, more revenue and more new industry. Some of the gas could be kept within Alaska to spawn a petrochemical complex, state officials say. At this writing, it seems a good bet that the gas line will indeed run through Alaska.

Earlier this year, the Interior Department asked leading oil companies to rank the offshore regions of the United States with the greatest potential. Alaska's outer continental shelf (OCS) regions scored high: The Gulf of Alaska was ranked first; the Beaufort Sea, third; Bristol Bay, fourth; the Bering Sea, 11th; Chukchi Sea, 12th; Cook Inlet, 13th, and Southern Aleutian Shelf, 15th.

The Interior Department has been directed by the White House to triple the rate of offshore leasing in 1975 by leasing ten million acres of public lands. Department officials have hinted quite broadly that, because of legal and political problems on the East Coast, they will auction lands beneath the Gulf of Alaska before allowing offshore rigs into the Atlantic.

Dangers offshore

On the other hand, the Council on Environmental Quality has warned that the Gulf of Alaska would present the oil industry with the most hazardous conditions it has ever faced. No firm plans have been announced as yet, but drilling in the Gulf of Alaska and perhaps in other offshore regions seems to be in the cards. If it is successful, more pipelines would be needed to carry oil to tanker terminals.

Yet more pipelines might also be needed if future drilling pays off on lands being titled to native corporations throughout Alaska. The native corporations soon will become the largest private landowners in the state. Under the terms of the Alaska Native Claims Settlement Act of 1971, the Eskimos, Indians and Aleuts of Alaska were compensated for their ancestral claims by a package arrangement worth $1 billion in cash and 40 million acres of land.

Twelve regional corporations have been formed under the terms of the law. These corporations will be empowered to lease some of the native-owned land for commercial ventures.

Oil companies helped the natives get the bill through Congress, since the land-claims question was holding up authorization of the trans-Alaska pipeline permits. And now the companies are talking with the natives about drilling rights.

"The bill was kind of ineptly labeled the Alaska Native Claims Act," said Karl Armstrong, secretary

At Valdez, southern terminus of the pipeline, port facilities for oil tankers proceed apace.

of Koniag, Inc., the native corporation on Kodiak Island. "Actually, it should have been called the Sierra Club Act." The way the legislation turned out, he said, three times as much land was set aside for parks and wilderness areas as for native ownership, and the natives and the conservation groups have become adversaries instead of allies.

The State of Alaska meanwhile has been active in leasing state-held lands for oil drilling and this, too, could lead to more pipelines.

A gas pipeline, a Pet-4 pipeline from naval oil fields, lines from the outer continental shelf, pipelines from native-held lands, pipelines from new lands leased by the state—all of these seem possible.

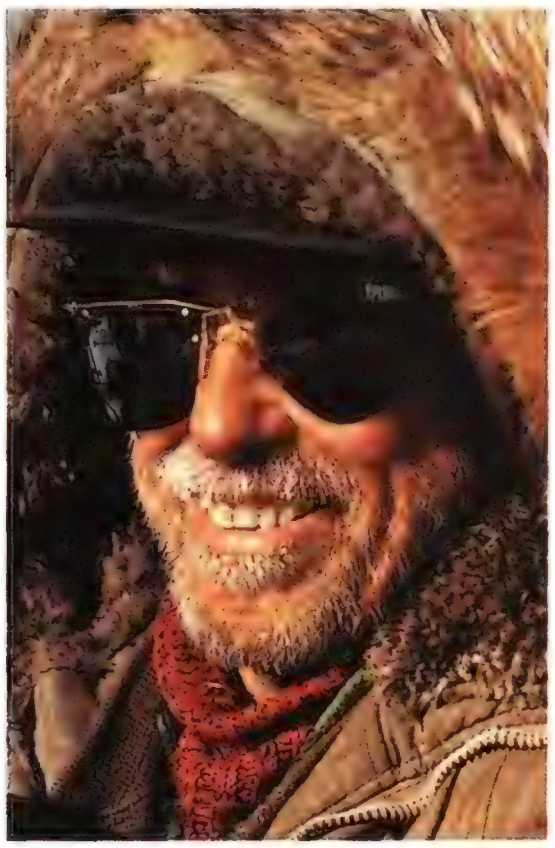
For now, with just the one pipeline, the boom gains momentum. In Anchorage, as in other American cities, people are taking to bike trails to get around traffic jams. Residential land is getting so expensive that condominiums are catching on. Those who can afford them are buying second homes 30 miles from town.

Richard A. Kennard, president of Peoples Bank and Trust of Anchorage, is one well-off Alaskan who admits to mixed feelings about what is going on.

"We can't allow ourselves to be dependent on the Arabs, that's all there is to it," he said. "All we can do is go along with the storm."

And yet, he concluded a bit wistfully, "The old fishing holes I used to go to I can't go to anymore. I don't want to stand in line."

Prudhoe Bay's complement of women, earlier this year, consisted, from front to rear, of two dining hall workers, a clerk and two oil camp administrators. By autumn the female population had quadrupled.



Typical faces of the new Alaska: oil rig foreman (center) peers in truck; heavy machinery operator (left) and high-tension power-line worker (right) smile into glare of the Arctic sun at Prudhoe Bay. His woolen face-mask frosted by his own breath, worker (opposite) ends 12 hours spent at 60 below zero.

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Photographs by Irving Penn

People of world materialize in ambulant studio

Though he roams the world, human beings in an intimate place, not the localities, intrigue a notable, sensitive photographer

The tent that Penn built. Because he couldn't count on suitable studios he designed a portable one.

Text by David Bourdon

During the last 30 years, Irving Penn has established himself as one of the most innovative and durable figures in the highly competitive field of fashion photography. Although he is known chiefly for his offbeat portraits of celebrities and elegantly composed fashion pictures (he has photographed more than 135 *Vogue* covers), he has traveled from time to time to remote parts of the world to make documentary portrait essays. For many of Penn's fans, his portraits of anonymous subjects in foreign lands are among his most moving and memorable photographs.

Ever since the camera was invented, photographers have journeyed to exotic locales to record what the people look like and how they live. What distinguishes the 57-year-old New Yorker from most other voyaging cameramen is that he concentrates exclusively on people—their faces, clothes and adornments.

"I have no ambition to show how these people live," Penn says. "I'm not a photo-journalist and am not especially interested in the kind of photographs that result from showing people in their natural surroundings." He much prefers to portray them in a "neutral environment"—that is, a portable photographic studio or its equivalent. There, "I'm able to control the posing, the play of light and shadow, and thus to enjoy the photographic subtleties that mean so much to me."

Consequently, while Penn has gone to painstaking efforts to visit foreign peoples in their own habitats, he actually has recorded them visually in a kind of limbo —the isolated studio.

The portraits Penn made during his photographic expeditions have been assembled in a new book, *Worlds in a Small Room*. (The quoted material in our captions is by Mr. Penn.) The book presents a dramatic and coherent opportunity to witness his concentrative style. Many of his portraits are so definitive that it is difficult to imagine their subjects looking any other way. Penn himself speaks of his photographs as being documents that he hopes will preserve something of "already dissolving cultures."

The book opens with a personal text by Penn, and includes narrative sections relating some of the background details and experiences of each trip. All but one of the picture essays were intended for *Vogue*, with which Penn has been affiliated since 1943.

Although Penn is an outstanding color photographer, all the pictures in his book are in black and white. "I have never seen what I consider to be a really *great* color photograph," he says. He has hardly cropped any picture. All were taken on 2¼″ x 2¼″ film and carefully composed before shooting.

The billing on the cover of *Worlds in a Small Room* describes Penn as "an ambulant studio photographer." His first ambulation to a foreign milieu, in 1948, was to Cuzco, high in the Peruvian Andes. There he came

On these pages: a sample of Worlds in a Small Room, *to be published November 1 by Grossman/Viking.*

All photographs (except p. 54) © 1974 by Irving Penn

"A man and woman posed in Rissani [Morocco] on the edge of the Sahara. They were speaking to each other along the road when asked to come in. I do not think there was family connection."

across an old-fashioned photographer's studio in the center of town. He rented it from the proprietor for three days and set himself up as town photographer. "When subjects arrived they found me instead of him."

Among his subjects were a brother and sister (p. 54), who display a touch of Victorian sobriety in the way they hold hands, while leaning like porcelain dolls against a piano stool. Penn's orchestrating presence can be felt in the rakish angle of their hats and the expressive shadows that give a new and fuller dimension to the calmly ruminative faces of his little subjects.

The Cuzco studio had one thing that Penn especially prizes, a north-light exposure. One of the many surprises of this book is the discovery that all of the photographs in it were shot in natural light—and always as it came from the north. Although Penn uses artificial light skillfully in his fashion photography, he has a special feeling for what he calls the "sweetness and constancy to light that falls into a studio from the north sky."

Sometimes, in his masterful manipulation of light and subject, an enigmatic effect can ensue, as in his powerful portrait of a pair of shrouded figures taken during a trip to Morocco (p. 53). The man, looking almost holy in his white burnoose, sits erect and directs a level gaze at the camera. The woman's shriveled-looking figure is totally concealed, except for a row of naked toes peeking from beneath the folds of her voluminous cloak.

When planning a trip to Dahomey Penn real-

© 1960 by the Condé Nast Publications Inc.

"Country children, brother and sister, dressed for a visit to Cuzco. The piano stool tells something of their tiny size." Penn, devotee of natural light, found a daylight studio in this Peruvian city.

ized he probably would not find good photographic space. So he "considered . . . a practical way of constructing a portable studio"—one that would be collapsible, airfreightable and sufficiently simple. The solution was to devise a modular system of aluminum pipes and hire a tentmaker to fashion a nylon skin for it. The tent has since been used in the Himalayas, at the edge of the Sahara and in New Guinea.

Perhaps the most startling aspect of Penn's portraits are the high-fashion poses into which he sometimes puts his models. The trio of belles (p. 57) may be native to Dahomey, but primitive they are not. As posed by Penn, who supervises the placement of every limb and fold of cloth, they have all the elegance of haute-couture mannequins.

Penn returned to West Africa to photograph the Kirdis of Cameroon, where the young people struck him as having "perfect physical beauty and peace of spirit." There, he took a striking photograph of a young, nearly nude girl, reclining voluptuously in

"A young Chhetri woman [Nepal]." Raising the portable studio was child's play for Sherpas, some of whom had climbed Mt. Everest. Penn was entranced by people of the "magic little medieval kingdom."

front of a seated youth in plumed headgear (p. 58). In this carefully calculated composition, the boy's legs echo the lines of the girl's arms, and his extended foot, with its almost incredible anklet, vies for attention with the girl's serene face. To further emphasize the artificiality of the situation, Penn included the edges of the seamless paper roll that serves as a backdrop.

When he went to Crete to see the old men and women who live in the small villages, Penn was fortunate to find two storage buildings, both with north

"Makehuku men from the village of Mandow near Goroka [New Guinea] known generally as the mud men of Asaro. They wear masks of gray mud sculptured over cane frames" to frighten the enemy.

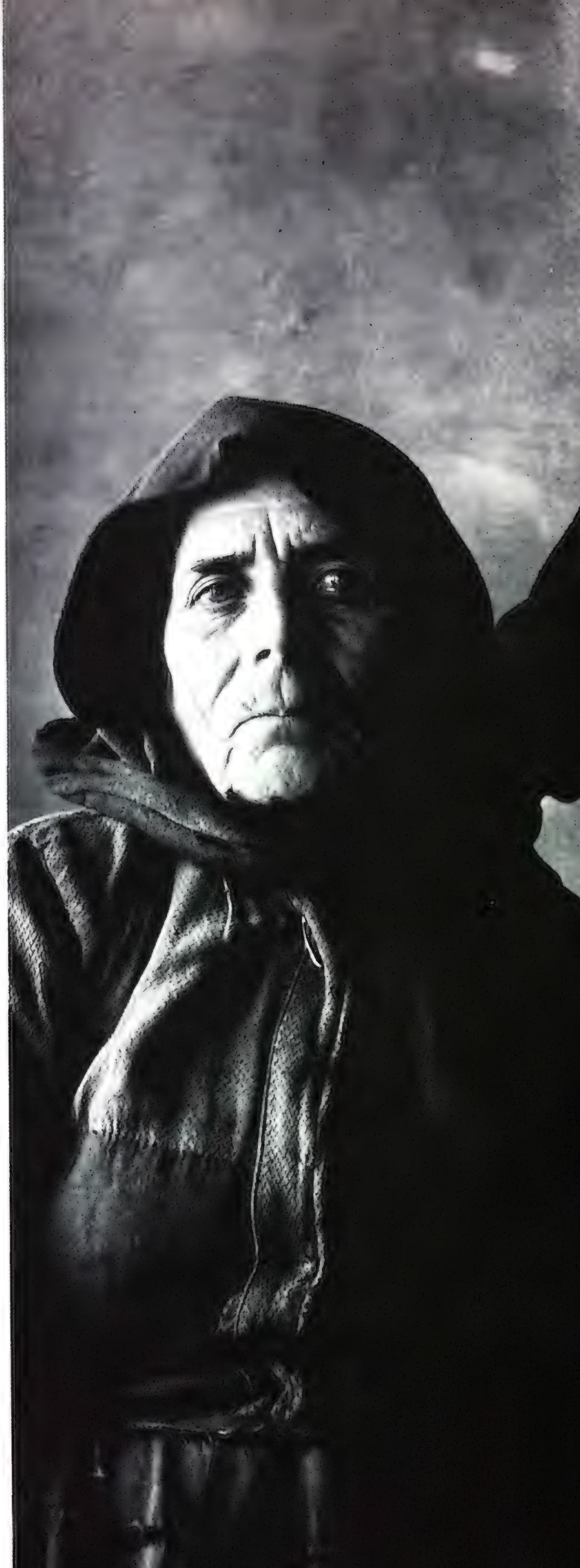
exposures. He had local masons rework and smooth the walls to provide a suitable background. It was against this that Penn portrayed the three Cretan women (pp. 58-59), a statement of character that is as timeless as the outlook of the women of Sophocles and Euripides. The photograph is a good example of Penn's composition at its most direct and severe; the pyramidal formation is reinforced by the spread arms and down-turned lips of the woman in the center and the overall effect is one of massive simplicity.

It is in his studio, wherever it is, that Penn combines the elements of his singular compositions, creating a dramatic fusion of the natural and the contrived. Penn's pictures are more than visual documents merely recording people in different places scattered around the world. Because he has one of the more comprehending and sophisticated eyes of our time, he has produced a series of portraits which, by virtue of their intensity, design and emotional power, become authentic photographic masterpieces.

"Three girls of Ganvié [Dahomey]. On their bodies cicatrices are marks of beauty . . . supposed to stimulate sexual excitement." Such decorations are regarded as far more attractive than cosmetics.

"A warrior and a virgin [Cameroon]. . . . The young man wears jangling iron ornaments on his leg, and the girl a *cache-sexe* fringed with cowrie shells."

"Old women of the Lasithi plateau [Crete]." Penn writes: "There is a beauty of wear and age in their faces . . . the eyes the most alive part of them."



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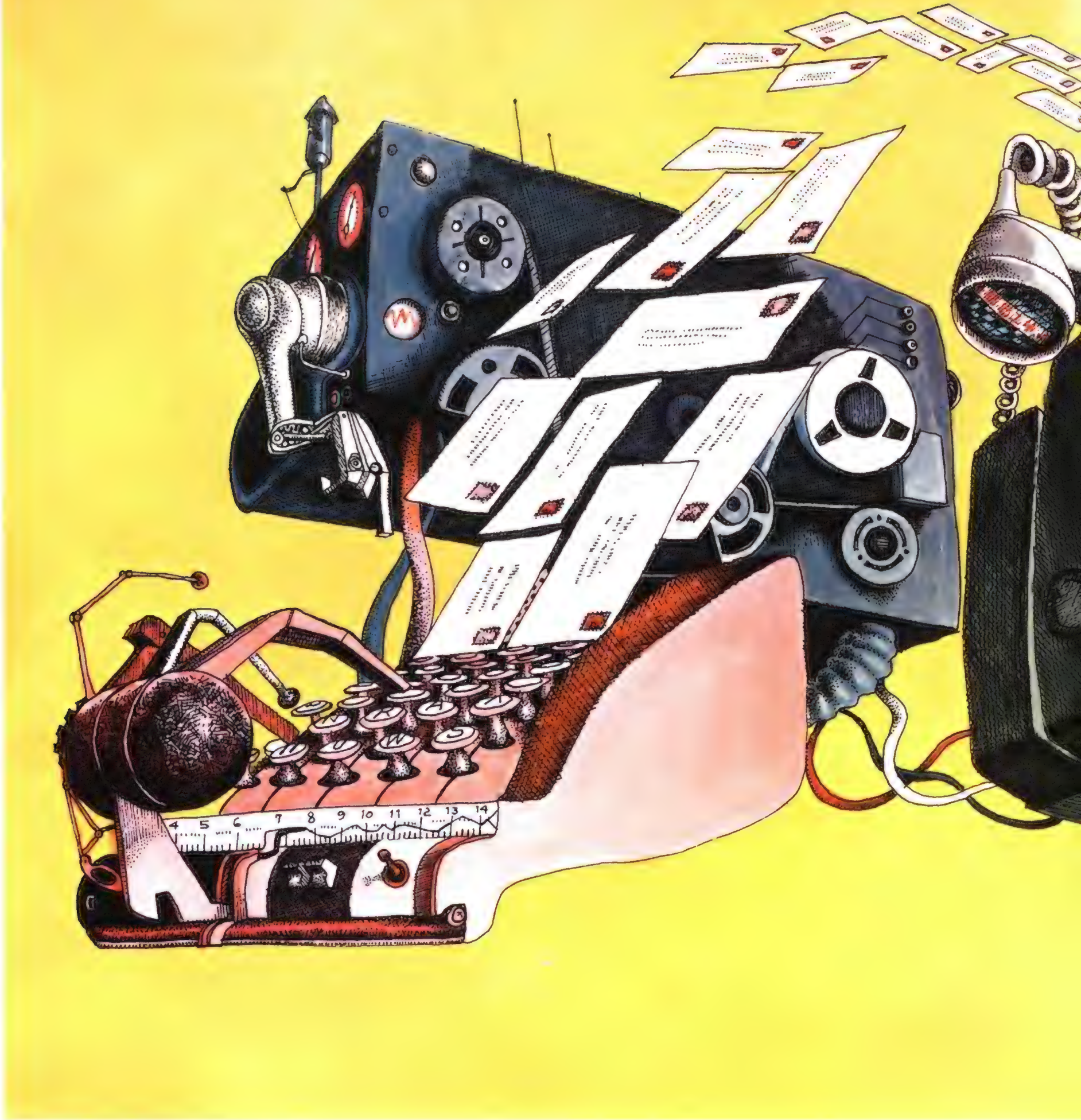
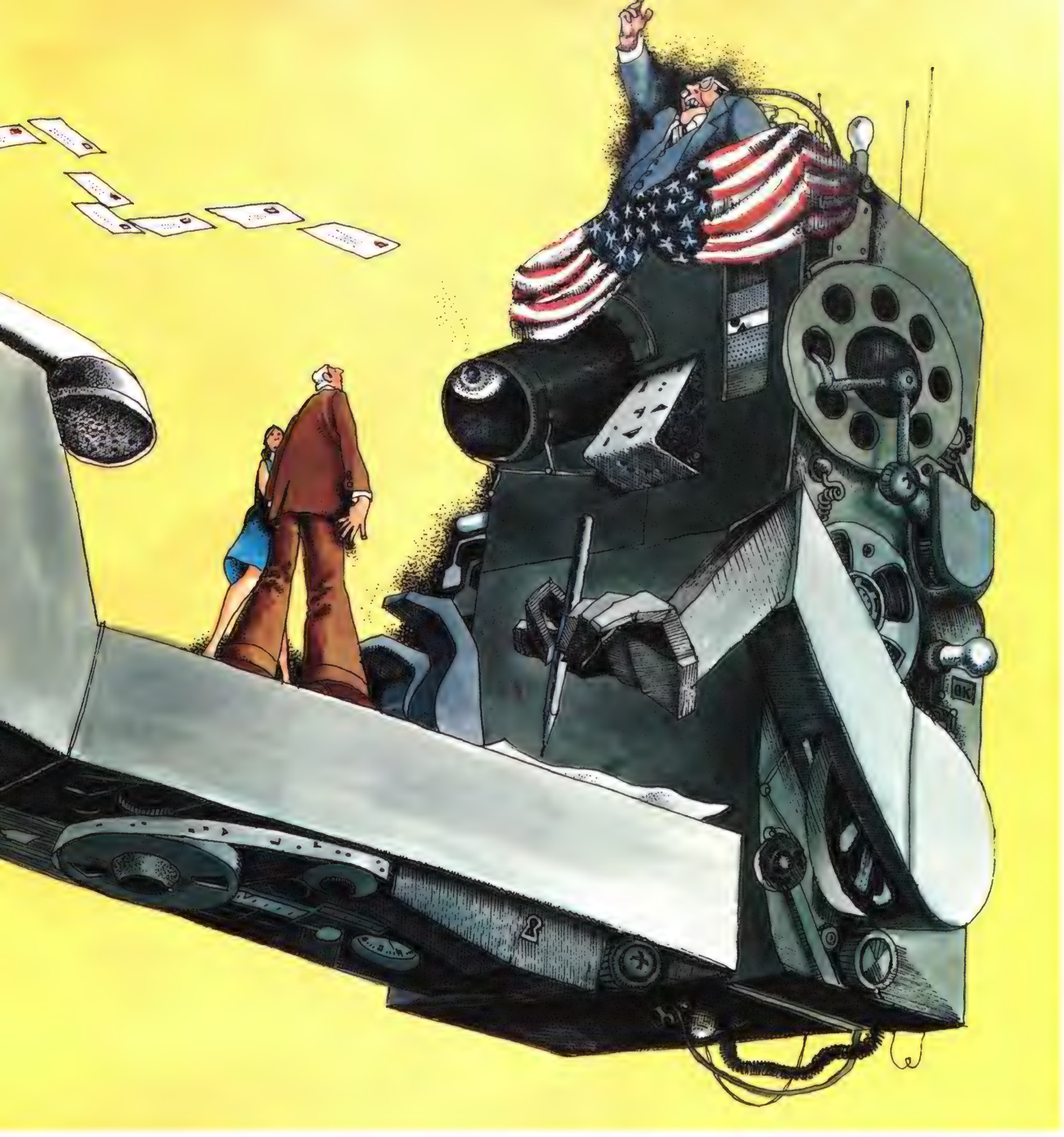


You're hearing it: new machines in the new politics

Text by Dennis Farney
Drawings by John Huehnergarth

Canned candidates by phone, 'personal' letters by computer—the ethics of it all may be doubtful but 'efficiency' seems to be the rule



Ta-pocketa-pocketa-pocketa: The machines are out to get your vote.

Real machines, that is, with gears that mesh and lights that wink on consoles, not old-fashioned ward-heeling political machines. Robot machines that call you on the telephone, computers that size you up without your knowing it, tricked-up typewriters that write you "personal" letters.

A machine has possibly written you already this election year of 1974 to request your money or your vote. If it was well-done it looked eerily like a personal letter from the candidate to you. It had his signature at the bottom. And it focused so precisely on the particular issues that are important to you that you might have sworn the candidate had read your mind.

But he hadn't. He probably didn't even read his letter to you. More likely, every sentence was impersonally selected from a data bank of canned phrases

Honest Abe's political computer may have been kept in his hat, but he also used form letters.

designed to appeal to diverse voters, by a computer that probably knows more about you than your next-door neighbor does. As for the candidate's signature—well, a machine probably wrote that, too.

It could be that your letter came from an aseptic-looking room of tile floors and fluorescent lights in suburban Washington, the nerve center of the Richard A. Viguerie Company, consultants in the use of direct mail for political and nonpolitical purposes. In that single room is assembled the whole apparatus necessary for conducting a sophisticated national political campaign by mail. There is the closely guarded magnetic tape library of about five million names and addresses, the machines that can pluck individual names and addresses from this collection and, finally, the other machines that can take those names and rap out letters to them.

One of the latter machines sits in the center of the room, going BRRAATT-BRRAATT-BRRAATT. That is the sound when it writes personal letters, one letter every seven-tenths of a second.

Technology wed to politics

What is really happening in that room is the marriage of technology to politics. It is a development that is reshaping both the look and the feel of the American political campaign. Political columnist James M. Perry describes it in his book, *The New Politics:* "It's not show biz that's taking over in politics, it's industrial and business technology. This new technology, which is changing the way all of us live, is finally being applied to the most disorganized and unsystematic endeavor in American life—politics. Things will never be the same again."

Certainly campaigns won't. The 1972 Muskie-for-President campaign, fighting for its life in the crucial Wisconsin primary, mobilized its state organization to collect detailed data about key Wisconsin precincts. Then the Muskie computer inserted appropriate bits of the data into letters to individual voters. When, for example, a Muskie letter talked about the high cost of living to a voter in Green Bay, the computer would automatically put it in terms of "the dollar you take to Prange's Department Store." In all, it was capable of some 300 variations on the basic campaign themes.

Similarly, Hubert Humphrey fired off two tons of computer-written letters in the 1972 Florida primary alone. But this was nothing compared to the Republican election effort. It sent out at least 27 million computer letters, targeting many of them like rifle shots to registered Democrats who found one McGovern position or another objectionable. To Catholic voters, for example, the Nixon computer might stress McGovern's relatively permissive views on abortion; to

blue-collar workers, his unpopular $1,000-for-everyone welfare plan; to Southern Democrats, who generally support high defense spending, the Senator's announced intentions to whack away at the Pentagon budget. And so it went.

In 1970, after a U.S. Senator up for reelection discovered that noisy jets had become a burning issue to voters of one city in his state, his computer was given the capacity to send somewhat different letters to voters *inside* the flight path than to voters *outside* it. That is a measure of just how precisely the computer can "target" individual voters.

If all this sounds a little like politics-by-automaton, we haven't seen anything yet, promises Murray Roman, chairman of Campaign Communications Institute of America, Inc., a New York firm. As a case, he cites his own nearly perfected invention, the little black box. About a foot high by three feet long, the little black box may eventually hook into a battery of

The technological candidate beckons by mail.

up to 50 telephones, dial telephone numbers automatically and switch on a tape-recorded message from the candidate whenever anyone answers—all, as an enthusiastic Mr. Roman explained at one press conference, "without a human interface. Just press the button and start the campaign!"

Murray Roman is first to admit that there is one drawback to his machine: It just sits there, indiscriminately dialing every number in a given exchange —homes, bars, Chinese restaurants, laundromats, dial-a-prayers. But the inventor is working to make his device more selective, and he has some other ideas, too.

Why not, for example, let the voter talk back to the black box? The box could tape-record the voter's response to the candidate's pitch, along with the voter's name and address, and pass it on to campaign headquarters. Headquarters could then respond with a computer-written letter or maybe a follow-up call from the black box. "All this is not pie-in-the-sky," Roman emphasizes. "It's possible right now. It's just a matter of cost."

It may not be pie-in-the-sky. But is it cricket? Is this the way campaigns ought to be conducted? Even Murray Roman admits that his black box is rather impersonal. "When you get situations like Hubert Humphrey talking to a two-year-old child who happened to answer the phone, that's a denigration of the instrument," he says. But he argues that the economics of modern campaigning, particularly the limitations imposed by new campaign-finance reform legislation, make computer applications almost indispensable.

Robert Jones, who supervised the Muskie computer operation in Wisconsin, considers the black box "the ultimate in insensitivity." But he argues that computer-written letters, far from being impersonal, can be the next best thing to a face-to-face conversation with the candidate. "We hear so much about 'selling' the candidate, 'images' and all that stuff," he says. "What we were really trying to do with the letters was to provide the best possible substitute for the candidate talking to each individual voter, to personalize the communication so that it did communicate."

"Targeting." Robots that call you up on the phone. Disembodied voices over the wires. Things that go BRRAATT in the night. It's all very different from the days when Abraham Lincoln debated Stephen A. Douglas, face-to-face on open platforms beneath the Illinois sky. It's another world entirely from that of William McKinley, running for President without leaving his front porch in Canton, Ohio. Or is it?

Some pretty knowledgeable political scientists and historians think things haven't changed all that much. The computer may be further eroding the declining power of the organized political party. It enables maverick candidates to vault right over traditional power brokers by recruiting highly personal organizations of their own. But the experts argue that in the end, all the computer really does is allow today's politician to employ the same wiles and stratagems that politicians of the last hundred or so years have employed—albeit with an eerie, perhaps ominous, new precision and selectivity.

"There's nothing very magical about a politician trying to figure out what a person thinks and then trying to please him," says political scientist and historian James MacGregor Burns of Williams College. "The computer simply allows him to do that on a more massive scale. Of course, sometimes a difference in scale can amount to a difference in kind. But my

Mr. Farney, an editor on the Wall Street Journal, *wrote about unsolved problems of radioactive waste disposal in the April issue of* SMITHSONIAN.

feeling is that the computer does not represent a major new development."

Actually, the machines may have brought us full circle, observes Robert Agranoff, an ex-political consultant who, as a political scientist at Northern Illinois University, is now writing his second book on the changing nature of American political campaigns.

"When districts were smaller, the Abraham Lincoln types could go out and talk to at least some people on a personal basis," Agranoff says. "Earlier in the 20th century the political party assumed this kind of role; the ward heeler had a considerable amount of personal contact." Then the mass media rendered the ward heeler obsolete. Only with the computer has it once again become possible for the candidate to address the voter "on the basis of something he knows about him as a person."

To go back to Professor Burns, he points out that Aaron Burr was good at "targeting" people (aside from Alexander Hamilton). In 1800 Burr canvassed New York City ward by ward, indexed voters and their leanings on file cards, enlisted Tammany Hall to get favorably inclined votes to the polls and thus helped capture the New York legislature for the Republicans. He ended up as Thomas Jefferson's running mate.

The basic quandaries candidates can get themselves into don't seem to have changed very much—nor have their methods of extricating themselves. Those quandaries usually involve political promises, and sometimes wriggling out of them.

As the Presidential campaign of 1860 began to unfold, Lincoln seemed likely to win if he could avoid making mistakes. But the country was inflamed and bitterly divided. Voters were pressing candidates for straightforward declarations on difficult issues of slavery and secession. Lincoln, having already addressed these issues in his platform, felt that any refinements in his views might be interpreted by supporters as backsliding. What he needed was a way of saying nothing as artfully as possible.

His political managers found one. They drafted a form letter and whenever a pesky Northerner wrote in with a difficult question, they sent him this: "Your letter to Mr. Lincoln, of _____, and by which you seek to obtain his opinion on certain political points, has been received by him. He has received others of a similar character; but he also has a greater number of the exactly opposite character. The latter class beseech him to write nothing whatever upon any point of political doctrine. They say his positions were well-known when he was nominated, and that he must not embarrass the canvass by undertaking to shift or modify them. He regrets that he cannot oblige all, but you perceive that it is impossible for him to do so."

Abraham Lincoln, of course, was elected despite such waffling. But if George McGovern's 1972 experience is any guide, the computer is a lot better at emphasizing a candidate's positions than at fuzzing them up, better at reinforcing the positive impressions of supporters than at overcoming the negative impressions of people inclined to vote for the other guy. Senator McGovern, after all, had a first-class computer-letter operation and used it to send out some 17 million letters in his Presidential campaign. But the letters, which proved so successful in raising money from true believers in the spring, proved much less effective in the fall.

The reason is, according to political scientist Walter DeVries, that the good impression made by one technological advance, the computer, was canceled out by others: television, radio and the modern newspaper. DeVries says that an increasingly educated electorate

The hand behind the letter: part flesh, part machine.

The voter only knows what he reads in the paper, in the magazines, in the mail and hears on television.

is studying more and more information about candidates from more and more information sources. This is rather reassuring. It might suggest that voters are a pretty canny lot, unlikely to follow any computer down the primrose path if we can get our hands on alternate sources of information. But it is also rather unsettling, because it suggests that the computer may well be quite effective in races for such lesser offices as state representative or state attorney general, where we know relatively little about the candidates.

Moreover, it doesn't even touch on a more fundamental concern of one thoughtful social observer, Amitai Etzioni, Columbia University sociologist and director of New York's Center for Policy Research. Etzioni believes that "a representative of the people should be bound to them in non-precise ways." That is, he should be something more than an automaton who always votes the way he thinks 51 percent of his constituents want him to vote. He should be free to be a statesman occasionally, to vote his conscience or merely to reflect factors that his constituents may not even know about.

"As the computer makes it increasingly possible to pinpoint the precise mood of the public, the representative becomes almost bound to the latest perversions of that mood," Etzioni continues. "The more he ascertains their precise mood, the more he becomes cemented to it. Abraham Lincoln, in contrast, had to stand on a higher level of generality because he couldn't find out precisely what the people wanted." If Etzioni is correct, the better a politician becomes at "targeting" specific groups with specific promises, the more headaches he creates for himself. But apparently politicians like such headaches, because they seem to be reaching for the aspirin while instructing their machines to do their damndest. And the machines can be fearsomely efficient.

"You can take any nine variables about a person—where he lives, census data like the percentage of people on welfare in his area, his party, things he volunteers to a political canvasser, like the main issues as he sees them or how he voted last time—and the computer allows you to write him between 280 and 300 different kinds of letters on the basis of those variables," says former consulant Agranoff. "Many of these computer data banks are capable of storing literally hundreds of pieces of data on individuals or neighborhoods. If you have a hundred different variables, the number of different letters you could write would be in the thousands. Realistically, though, most candidates narrow the variables down to a few."

It is clear from Agranoff's remarks that however much we may like to believe that our individual variables are our own personal business, the computer can get clues to a great number of them—from the census, from public party registration records, from membership lists of our politically active union or professional society, from our off-the-cuff remarks to the friendly neighborhood political volunteer who shows up at our front door. The computer can find out whether we're likely to be for abortion on demand and a host of other things. And how the computer uses those variables is pretty much up to the candidate.

A signature that really smudges

Meanwhile, consultants keep coming up with new ways to "personalize" those machine-written letters. One is to use water-soluble ink for the machine-produced signature. Then, if we happen to rub our sweaty thumb over the signature, it will smear, just as on the real thing. Another is to use the candidate's home address on the letterhead; it gives the letter a nice homey touch.

We amateurs might think the body of the letter is the most important part, but the consultants have found that this isn't necessarily so. One film study of the eye movements of people reading letters found that something like 80 percent of them skipped down to read the postscript before they got to the body. So a good consultant will make the P.S. a real grabber.

"Contrary to popular belief, we don't make mistakes on purpose to make it look like a secretary typed the letter," says an official of Datatab, another New York firm. Maybe not. But most consultants do include a secretary's initials down at the bottom to make it look as if a human typed it.

Many candidates already recruit block-by-block networks of volunteers who agree to write letters of endorsement to their friends and neighbors. Campaign headquarters typically supplies the volunteers with a suggested text and the volunteers dutifully copy it out in their own hand. Agranoff thinks it may be only a matter of time until some enterprising candidate guides his *computer* to write such letters in the volunteers' names. Such letters would be more sophisticated. The volunteers could still sign them, but the texts themselves would be individually tailored by the computer and its data bank. "I guess this is where I'd draw the line," says Agranoff. "I don't think the average citizen would have the tools to see through it."

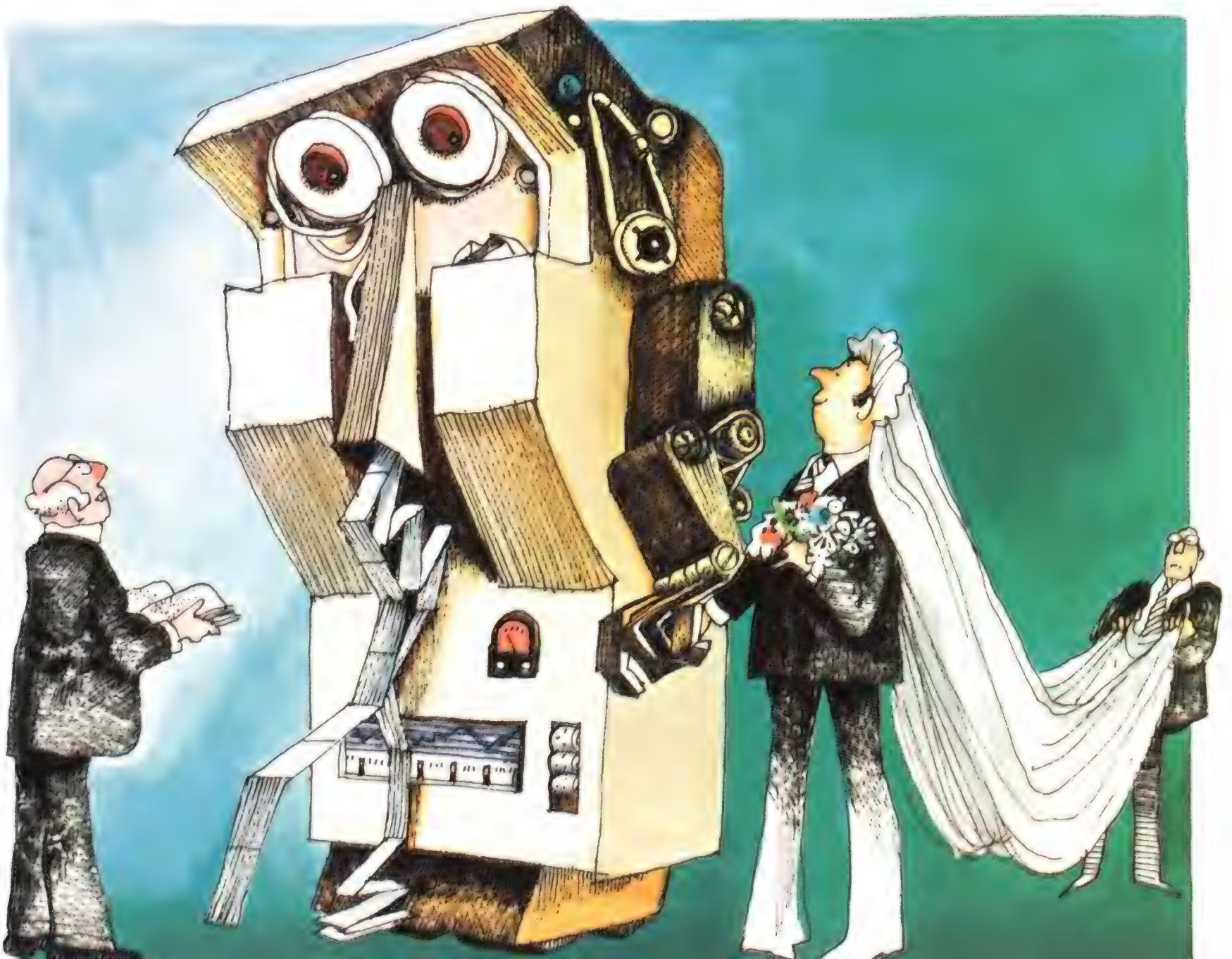
Etzioni's answer to all of this would be to sharply limit the use of computers in campaigns, simply by limiting the total amount of money any candidate can spend. For good measure, he would adopt the British system and limit the campaign itself to three weeks.

Veteran political writer Jim Perry takes a more sanguine view. He still believes, as he wrote in *The New Politics,* that technology is invading politics and that the campaign will never be the same again. "But I just don't think this is as dangerous as I once did." He explains: "We always underestimate the people. The people have wised up to this gimmick. I think they've come to realize that a computer-written letter isn't really a personal letter from the candidate. So they're taking them with a grain of salt, just like they take ads selling swampland in Florida."

Maybe. Maybe we are too smart to be taken in. Maybe all those mad robots on the campaign trail are more amusing than sinister, and maybe the things they're doing aren't particularly newfangled either. Maybe.

But if you listen closely on these crisp fall days you may hear the BRRAATT-BRRAATT-BRRAATT of the machines at work. They are plucking names from magnetic tape libraries, dialing telephones, signing promises in water-soluble ink. It is clear that the politicians are still counting on machines. The feeders of machines are getting smarter all the time. One admonition follows: Stay on your toes out there.

For better or for worse, the modern candidate
has willingly wedded the new technology of politics.



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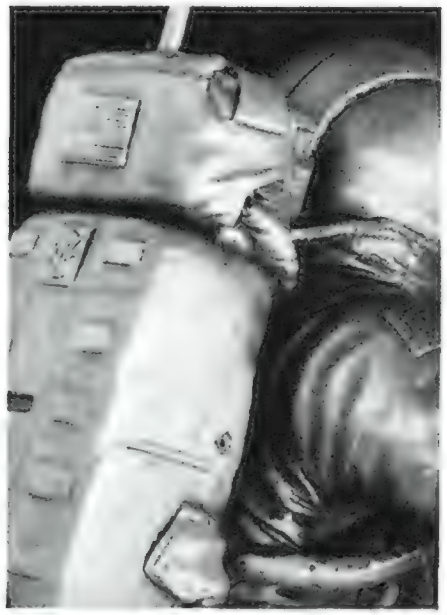

The American People 1776-1976

Ten finely detailed sculptured figures. Portraying the ten generations of Americans from our Revolutionary forebears to the present.

AVAILABLE BY ADVANCE SUBSCRIPTION ONLY
Limit: One collection per subscriber.
Subscription rolls close October 31, 1974.

THE AMERICAN PEOPLE 1776-1976 is a unique artistic tribute to our American heritage. In ten superbly detailed sculptured figures, this extraordinary collection will span the ten generations of American life from 1776 to the Bicentennial. Two hundred years of the American experience.

Each figure will be representative of its own generation. Each will have its own character, its own personality. Each will be an original work of art, commissioned and created exclusively for this collection.

The figures will be meticulously crafted in solid, fine pewter and issued in a strictly limited edition by The Franklin Mint, world-renowned for the quality and artistry of its limited edition collector's items.

Ten Generations, Beautifully Portrayed

The collection begins with *The First Citizen*, a New Englander who leaves his farm to fight for freedom. The year is 1776. Independence has been proclaimed, but the precious right to life, liberty and the pursuit of happiness must still be won through arduous years of conflict.

The second sculpture is *The Pathfinder*, seen in the Appalachian wilderness in the early 1800s. The sculptured detail of the figure is so fine you can read his initials—D.W.—carved in delicate tracery on his powder horn.

As the generations succeed each other, *The Canal Boat Man*, brawny and tough, poles his towboat along the Erie Canal in the 1820s. *The Prospector*—a California '49er—has just found a heavy nugget in his pan.

The first woman in the collection is *The Homesteader*—one of the pioneers who traveled West in the 1870s, braving hardship and danger to settle on free government land. *The Gibson Girl* of the gay nineties presents an interesting contrast, as she plays croquet, enjoying the new freedom of the Gilded Age.

The Immigrant, carrying her baby in her arms, is one of the multitudes who came to these shores from Eastern Europe in the early years of the twentieth century, in quest of freedom and opportunity for themselves and their descendants.

Next in the collection is *The Jazz Man* of the twenties. You can almost hear the new, syncopated rhythms of the Jazz Age as he blows his horn.

The GI of World War II is a combat veteran seen in a relaxed moment on a road in France, after the Normandy invasion. And the concluding figure represents the proudest achievement of today's generation, *The Astronaut* planting the Flag of Freedom on the moon.

Ten men and women. Ten generations of Americans. They tell a 200-year story of *people*. Working. Fighting. Venturing. Playing. Daring. Building lives and futures for themselves and for all Americans. The complete collection is a unique artistic representation of the diversity and the continuity of the American spirit.

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Each figure will be sculptured in the finest detail, with complete devotion to historical accuracy. Each article of clothing, each tool, each action is authentic in every respect, and completely true to the life of the time.

The fringes on The Pathfinder's buckskins . . . the fine embroidery on The Immigrant's apron . . . the valves and bends of The Jazz Man's trumpet . . . The Astronaut's complex equipment—each tiny detail is exquisitely sculptured, with superb skill and artistry.

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Throughout the history of America, and increasingly today, pewter has been prized for its softly gleaming luster and its enduring beauty.

But there are many grades of pewter. Only the highest quality of pewter—known as "Fine Pewter" since Colonial times—will be used by The Franklin Mint for these sculptured figures.

Each figure will stand on its own integral, sculptured pewter base. Each base will carry the hallmark of The Franklin Mint and the title of the work. It will also bear the signature mark of the brilliant sculptor Andrew Chernak, who created each of these original works of art.

Strictly Limited Edition

The American People 1776-1976 will be issued in a single strictly limited edition. The series of ten sculptures is available *only* by advance subscription, and there is an absolute limit of one collection per subscriber.

The total edition will thus be exactly equal to the number of valid subscriptions postmarked by the closing date of October 31. *When each subscriber has received his sculptures, the molds will be broken and these limited edition works of art will never be produced again.*

No Advance Payment Required

The sculptures will be completed and sent to subscribers at the rate of one every other month, beginning in December, 1974. The original issue price is $55. per sculpture. *No advance payment is required.* Subscribers will be billed for each sculpture after shipment, in two equal monthly installments of $27.50 per month.

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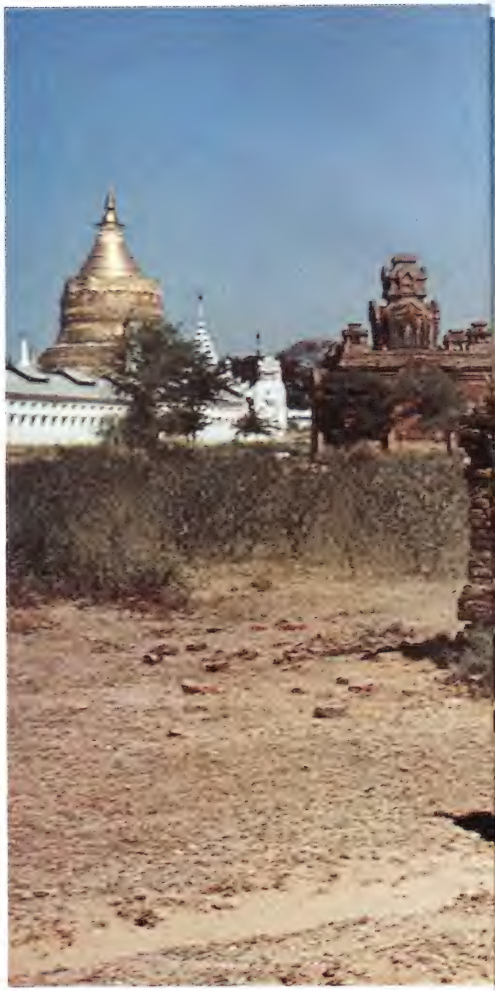
31-86

The Pathfinder, shown actual size.

Closeup of detail.

A shrine city, golden and white: the seldom-visited Pagan in Burma



The hour before sunrise is the best of all in Pagan, the ancient capital of Burma. The smell of grass soaked in dew is strong and the pale green line of the horizon is spiked with temple spires. Somewhere a rooster crows and the creaking of an oxcart is heard along the road. The smoke of cooking fires begins to rise from behind the bamboo hedges of small compounds and women make their first trip to the well. Slowly the dawn haze begins to lift. The sun floats up. And from a far village, where a festival is being held, comes the low burbling sound of Burmese gongs.

Pagan (rhymes with right-on) is a quiet place. Yet in the two-and-a-half centuries of her splendor—during the 11th to the 13th centuries—at about the time when European churchmen were raising their cathedrals to the glory of God—the kings and priests and common people of the Pagan dynasty were pouring creative energies into building thousands of soaring temples and shrines to honor Buddha.

Today, as one climbs to the top of one of the terraced monuments and looks out over the arid plain, it is marvelous to feel the spiritual impetus. Stretching along a slow curve of the Irrawaddy River for more than 16 miles is a shining vista of tall shrines with their shining stupas covered in gold leaf and lime-washed temples everywhere, startling white like frosted wedding cakes. There are 2,000 of them, large and small, monuments and ruins of monuments, some sprouting airy crowns of withered grass, some like beehives in dull rosy brick, some studded far across the plain like chess pieces on a giant board.

Like their European counterparts, Pagan's religious structures reflected a consuming devotion and dedication to the belief that men could acquire merit

The Mydans, a renowned photographer-writer team, were coauthors of the book, The Violent Peace.

Ancient temples, the remaining holy places of a capital that flourished 900 years ago, dazzle the eyes of devout pilgrims even today

Photographs by Carl Mydans

Text by Shelley Mydans

A vista of temples—many in ruins, some excellently preserved—spreads over 16 square miles in Pagan, the ancient capital of Burma. A sleepy place today, the chief traffic consists of an occasional oxcart.

The Sarabha Gate, made of stone and dating from the ninth century, is all that remains of old city's wall.

Overall view of Pagan was photographed from tallest building, 201 feet high. The Ananda

through good works. The Theravada Buddhism of Pagan was pure, austere and, in a way, self-centered. Unlike the Mahayana Buddhists, whose Bodhisattvas seek to rescue all mankind, the monks of the first Theravada school concentrated on their own salvation. That path lay through accumulated merit—and the greatest merit was through building Buddhist shrines.

Almost no trace remains of the city that lay at the heart of this architectural and spiritual explosion. Instead there are only a dozen or so tiny villages, shaded by mango trees and tall bamboo. And in place of the huge war elephants and royal barges, traffic moves dreamily along the dusty roads while narrow fishing boats navigate the river.

Until recently, few Americans attempted to see the temples and stupas of Pagan. The Burmese government discouraged foreign visitors by limiting visas to 24-hour stopovers. Three years ago this isolationist Southeast Asian country opened its doors a crack wider by allowing outsiders to remain for a full week. As a result, the annual number of tourists has nearly doubled. At the same time the Burmese government's tourist office began planning tours outside Rangoon, including trips to Pagan, which lies some 300 miles up the Irrawaddy from the capital and 90 miles southwest of Mandalay.

According to the old chronicles, the Pagan dynasty of Burmese rulers was founded in A.D. 107, and presumably those ancient kings established the city in that year. But the chronicles are not corroborated by modern research. It is likely that the ancient Burmese were the descendents of a migratory people who were pushed southward over the centuries from an area of China near the eastern borders of Tibet. Originally they were shepherds and goatherds, easy prey for their more sophisticated Chinese neighbors. During their long and harassed journey south they acquired techniques of war and agriculture and a variety of religious beliefs. They were an independent people and did not settle anywhere for long. Finally, the wanderers moved into what is now central Burma. There they dislodged the indigenous Mons, who were more advanced culturally than the Burmese, partly because they had adopted arts and ideas from their Indian neighbors and the Sinhalese of Ceylon.

The first great king of Pagan was Anawrahta, during whose reign (*c.* 1044-77) the Burmese and their capital burst into history. The legend goes that Anawrahta one day came upon a young priest sewing on his saffron-colored robe. "Why do you sit here cutting up and patching your robe?" the king asked. "As the mother of the Buddha had to patch his old, worn robe after his long years of asceticism before he could preach to his disciples, so we who would be worthy should wear patches before we teach the Law."

The priest, who greatly impressed the king, was a Mon and a Buddhist, whereas the religious practices of the early Burmese included animism and the worship of local spirits. For during their migrations they had picked up magical and erotic rituals from their Tibetan and other nearby neighbors and, from the hill tribes of South China, a belief in good and evil nature spirits whom they called nats.

Anawrahta took the priest into his service and gave him the task of converting the local priesthood while he sent a request to the Mon kingdom for holy relics and Theravada scriptures. According to the "Chronicle of the Glass Palace" the Mon king sent a haughty

temple, whitewashed, appears in foreground
and the Irrawaddy River is visible in background.

answer, thereby inciting Anawrahta to attack. The legend says he amassed a hard-to-believe 98 million soldiers and 8 million horses, 800,000 elephants and 800,000 boats. The tail of this force had not yet left Pagan when its vanguard was in Thaton, some 300 miles to the south.

The Mon king was captured in 1056 along with some 30,000 priests, scribes, artists and artisans, according to contemporary chroniclers: "such as were skilled in carving and painting; masons molders of plaster and flower patterns; blacksmiths, silversmiths . . . founders of gongs and cymbals, filigree flower workers; doctors and trainers of elephants and horses. . . ." All these Anawrahta brought back to Pagan—along with 30 elephant loads of scripture.

More recent historians have put this conquest of the Mons and the consequent rise and flowering of Pagan in a slightly different context. Shortly before Anawrahta's victory another powerful man, the king of the Khmers in Angkor, had pushed his dominion westward, crowding a surge of Mon refugees into the old cities of Thaton and Pegu. By mid-century they had so pressed on these centers that Buddhist Mons were in danger of being overrun by Siva-worshipping Khmers.

Anawrahta intervened, allying Pagan with the Mon Pegu to hold Thaton against the invaders. Thus, according to British historian D. G. E. Hall in his *History of South-East Asia,* "the first Union of Burma was formed by a champion of Buddhism against invaders whose king was identified with Siva." Pagan overcame Thaton but "the defeated conquered their conquerors: Mon culture became supreme at the court of Pagan. Pali became its sacred language and the Mon alphabet was ultimately adopted for the literary expression of

Sacred lions, made of plaster and brick, guard approach to a temple. This neglected one sprouts a grass mane.

A 31-foot-high Buddha, covered with shining gold leaf, is enshrined in an alcove inside Ananda temple.

Although it is not the largest temple in Pagan, the multitiered Ananda, built in 1901, is

the Burmese language." It was a key event in Burmese history, a triumph for Theravada Buddhism which became and still remains the most powerful factor in Burmese national life.

In 1059, just three years after his conquest at Thaton, Anawrahta began building the first and most beautiful pagoda, the Shwezigon (p. 81), though he did not live to see it completed. For the next 250 years both kings and commoners put their resources and energies into building temples large and small, until they are said to have covered some 240 square miles of the area in and around the walled city of Pagan.

When Anawrahta began his architectural masterpiece, the Shwezigon pagoda, he understood the Burmese well enough to know that they were not ready to accept the religion of the Mons wholeheartedly. Therefore he dedicated the Shwezigon to the 37 Principal Nats as well as to Buddha. "Men will not yet come for the sake of the new faith," he is quoted as saying. "Let them come for the sake of their old beliefs and gradually they will be won over."

The people came to the Shwezigon, as they still come, to worship Buddha, to bring flower offerings and light incense for his pleasure, to buy tissue-thin squares of gold leaf to paste on the gilded spire to keep it bright, or simply to sit in prayer or wander on the terrace in the serene atmosphere. The nats still hold their place in the iconography of the shrine, as they are still remembered in the village festivals, held in a kind of

one of the most famous. Many monks and laymen believe that whitewashing enhances its beauty.

nervous affection and respect. And Buddhism, with its almost limitless powers of assimilation, tolerates and even incorporates some "good" nats.

The Shwezigon, which became the prototype of the Mon pagodas, is a solid, bell-shaped stupa that rests on three square terraces. In ancient India it was the custom to honor dead heroes by building huge mounds of earth over their burial places, and these evolved into the formal, domelike stupas that early Buddhists erected over sacred relics.

The relic enshrined beneath the Shwezigon pagoda is an ancient replica of the "Kandy tooth," so named because the original of this tooth of the Buddha is kept in the temple at Kandy in Sri Lanka (Ceylon). The golden dome of the spire rises in a series of fanciful moldings to a stylized lotus, above which floats an intricately wrought finial topped by an umbrellalike *htee*. On the terrace, on each of the four sides of the dome, are airy teakwood pavilions with intricate, carved roofs. Pilgrims from all over Burma enter these "adoration halls" to praise Buddha and offer flowers to his image. Around the base of the central dome, set in enamel panels, are scenes from stories of Buddha's previous lives.

It is this historic Buddha that all Burma's Theravada Buddhists revere. And it is his image—standing in an attitude of teaching or reassurance, sitting with his right fingers touching the earth in mastery over evil, lying on his right side at the time of his entry into Nirvana—that one sees throughout Pagan's shrines.

After Anawrahta's death in 1077, the Shwezigon pagoda was completed by his successor, Kyanzittha, who also built the Ananda temple (left), one of the most venerated in Pagan. Tradition has it that the plan for the Ananda was inspired by the cave-temples of India. The interior, with its narrow passages and deep recesses where four giant golden Buddhas tower above the people, does have a cavelike quality. But, whether or not this particular legend can be credited, it is true that the early Pagan monuments relied heavily on Indian design and engineering.

The Ananda is a temple of breathtaking beauty. Its rising tiers of terraces with their flamelike pinnacles have been whitewashed to a stark purity (though this whitewashing, with its obliteration of original decoration, is a recent "improvement" and deplored by modern scholars). Above the topmost gallery rises a tapering cone shaped like a beehive and representing the magical mountain of the world that rises between heaven and Earth. It is surmounted by a golden spire and topped by a *htee*.

The builders of Pagan were primarily interested in architectural structures rather than decoration. The geometry of squares and circles rising to a tapering, sky-pointing top was what held their interest, rather than the decoration of the shrines or sculpturing of Buddha images. With very few exceptions the Pagan monuments are built of brick covered with a thin, hard coat of plaster which was carved into leafy or flamelike designs around the doors and windows.

The basic craft of the Mon builders was masonry. In Pagan they found a reddish clay which hardened well over brushwood fires in the open air. After the bricks were fired, the masons rubbed them together until their surfaces were glassy smooth. They were laid without mortar so closely that a needle could not penetrate between them.

Buddhism takes hold

In 1165 Sinhalese forces pushed up the Irrawaddy, took Pagan by surprise and killed the current king. There was a break of nine years in the royal line after that. By the time the next king came to the throne of Pagan, the predominant Mon influence had waned. From then on both the language and the architectural style of Pagan shifted from Mon to Burmese. And then a key change occurred—the type of Buddhism followed in Pagan shifted from that introduced by the Mons of Thaton to the reformist school of Ceylon. This was another watershed in Burmese history—and for all of Southeast Asia, which today is divided into Moslem and Buddhist nations. For when the overwhelming dynamism of Islam swept through the area

The Shwezigon pagoda, built in the 11th century, is still active as a place of worship. In one of its adoration halls, pilgrims from all over Burma come to pray and gild images of Buddha with gold leaf.

in the 14th and 15th centuries, those countries such as Malaysia and Indonesia, where the older, stricter form remained as the established religion of the ruling class, Islam captured the following of the common people. But where the reformed school of Ceylon had taken hold—as in Thailand, Laos and Cambodia as well as Burma—Islam made no headway.

The era of Pagan's glory came to an end with the establishment of the Mongol dynasty in China and the actions of a very foolish king, Narathihapati, who ascended the throne of Pagan in 1255. Kublai Khan, then ruling in Peking, sent three ambassadors to Pagan, as he did to all the kingdoms on the borders of his sphere, requiring tribute. Narathihapati proudly refused. His description of himself, which he had inscribed on a pagoda that he built, is telling: "Supreme commander of 36 million soldiers, swallower of 300 dishes of curry daily." He also claimed to be master of 3,000 concubines.

When the preoccupied Mongol chieftain had time to ask Pagan again for tribute, Narathihapati murdered the three envoys. Kublai Khan thereupon instructed his Tartar armies in the south of his kingdom to punish the Burmese. And in the battle that followed they waited the attack of Narathihapati's great war elephants until they were within arrow shot. Then they set fire to the brush between them and let loose their arrows. The frightened elephants stampeded, trampling the Burmese foot soldiers behind them. It was a rout. But it was not until almost a decade later that the Tartars pushed down again into the upper reaches of the Irrawaddy valley.

Learning of their approach, Narathihapati panicked. According to some reports, he rifled many stupas for their bricks to fortify his defenses. Then, fearing for his life, he fled. Afterward, from his retreat far to the south, Narathihapati sent belated tribute to Peking and, feeling safe at last, returned to his capital where he was poisoned by his son. Later chronicles expressed their scorn for Narathihapati by labeling him "The King Who Ran Away From the Chinese."

The Mongols occupied Pagan for little more than a decade and they left few signs of their presence on the buildings that remain. They were strangers in a strange land, and in the end, when they retired, they had to fight their way through the hostile Shan hill people to reach China. The Shans were now a dominant force in Burma.

The weakened Pagan dynasty lasted another 35 years, through the reigns of three more kings. But the center of power—and the collective genius that gave it meaning—had shifted away. The irrigation system silted up and crops began to fail, trade with India and Southeast Asia dwindled. Over the years the carved teakwood palaces fell to erosion, fire and white ants. Kings and courts moved on to other capitals and the people drifted away. The only trace of the ancient capital wall that remains is the stone ruin of the old Sarabha Gateway (p. 74), built before Anawrahta's reign and housing the images of two nat spirits, brother and sister. None of the secular buildings, which were made of wood, have survived. Where once there were carved and sometimes gilded teakwood palaces and monasteries, lecture halls and schools—light and airy counterparts to the tall brick monuments and serving as life-centers for them—now there is dry grass, cactus and prickly weeds.

Soaked in the atmosphere of history, one is almost unaware that modern life goes on in little villages that nestle in the dark green patches on the plain. Some of these villages, such as today's Pagan, consist of little more than a few quiet lanes, a school, a marketplace and the woven bamboo homes of some 3,000 people.

For centuries Pagan has lain so quietly it was all but forgotten by the world. Not even Rudyard Kipling, who made famous the nearby "road to Mandalay" (which is the Irrawaddy River), seems to have been aware of it. But there has never been a time when Buddhist pilgrims did not come to Pagan to offer flowers to Buddha, to buy the little squares of gold leaf that glorify his image, and to gain merit.

Although Pagan may seem to the foreign eye a sleeping ruin, more than a hundred of its temples and pagodas remain active places of worship. A place of tranquility and spiritual grace, Pagan, as it has been for nearly 900 years, is the holy city of Burma.

Pilgrims stroll on a terrace of the Shwezigon pagoda, which has spectacular gilded stupa. It is dedicated to Buddha and 37 nats, Burma's pre-Buddhistic spirits.

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Text and paintings by Bonnie Dalzell

Exotic bestiary for vicarious space voyagers

Designed for a Smithsonian exhibit, Life in the Universe, *these extraterrestrial creatures may be weird, but are also logical*

These two green antelope are from a planet with a temperate climate and low gravity, which allows such large animals to get around with only two legs. The green is camouflage to avoid their predators.

To be put in charge of evolution on nine planets is a task no self-respecting biologist could shirk. So when the Smithsonian's National Air and Space Museum needed someone to design life-forms for the Pick-a-Planet exhibit in its newly opened hall, Life in the Universe, I leaped at the chance.

Designing unearthly animals is a game anyone can play but there are some logical rules—the same ones that apply on Earth theoretically apply elsewhere. The most basic rule is that life evolves in response to the nature of the environment. One major feature of our environment is something we rarely think about—gravity. But what kinds of animals would you find on a planet where gravity is three times as strong as on Earth? Or only two-thirds as strong? What if the planet were hotter overall? Or colder? Wetter or drier? By combining these variables, we arrived at nine imaginary planets, and for each one I designed three animals —terrestrial, aquatic and aerial. What follows are some of my candidates for an interstellar zoo.

The pair of biped antelope (above, right) are from a low-gravity, temperate planet. Each has a mass equivalent to a donkey on Earth (about 600 pounds) but on its native planet it weighs only 400 pounds. A deep chest houses a large heart and voluminous lungs for extracting oxygen from the relatively thinner atmosphere of their planet.

Bipedalism would be far commoner for large animals on a lower-gravity planet than it is on Earth. The two limbs available for support would be under less

The hexalope inhabits a hot, dry world with gravity like that on Earth. The lethal horns are used in defense against their enemies. Six-leggedness leads to stability and no more confusion than in insects.

stress so they would not have to be as precisely engineered or as strong. Unlike a kangaroo, the only large mammal on Earth besides Man that is a biped, these green antelopes are striders, not hoppers. Their short tails are the clue: Large hoppers always need a long tail for a counterweight, but striders can operate with or without such apparatus.

The green antelope are social animals and do not use their horns in defense against predators: Their only effective defense is flight. The males use the short hooked horns in combat over females. Such fights are violent, but few individuals are injured owing to the ineffective positioning of the hooks on the horns.

The advantage of six-leggedness

The hexalope (below, left) is a six-legged herbivore that evolved on a planet with a very dry climate and gravity similar to Earth's. Because there is so little water on the planet, the fishlike predecessors of land animals were bottom crawlers in shallow, often seasonal seas and lakes, rather than being open-ocean swimmers as were the first fish of Earth. Early marine organisms on Earth had multiple pairs of fins but lost them when they became true swimmers: For a free-swimming, torpedo-shaped object, two sets of diving planes are both necessary and sufficient. So when certain earthly fish began to move out of the sea onto land, the four fins became four legs. In contrast, on the hexalope's world, the original bottom-dwelling fish/crabs were direct ancestors of the land-living forms and their terrestrial descendants retained multiple sets of limbs.

There are advantages to having six legs. For example, hexapodal locomotion provides a support tripod for the animal even at fast gaits. (Four-legged animals have a stable tripod of limbs when walking but not at faster gaits.) An animal with a large central nervous system would not encounter any problems of coordinating its six legs, as one might at first think. After all, earthly insects with three pairs of legs are hardly noted for their well-developed mental powers but most of them walk just fine.

The hexalope is a social animal. Any combat that occurs between members of the species is highly ritualized. This is necessary because the long, multiple forked, backward-projecting horns are lethal. Highly evolved social animals rarely kill each other in combat: The primary use the animals have for their horns is self-defense against predators and both male and female hexalopes are so armed.

Bonnie Dalzell was trained as a paleontologist at the University of California (Berkeley) and has worked for several U.S. and Canadian museums.

The striping of the head and tail is a kind of disruptive coloration which confuses a stalking predator as to the direction the hexalope will bolt if it is charged. The dark glandular patches on the legs are the sources of odors that are important in communication within a herd.

Once one gets over the idea that an antelopelike creature might have only two legs or might have six legs, there is nothing so surprising about these first two animals. Extraterrestrial animals should, one may think, be outlandish—but once one understands the conditions of their world and how these are most likely to affect evolution, nothing is really outlandish —and nothing is commonplace, either, unless you are the sort of person who could objectively consider a giraffe as a commonplace and predictable creature, having never heard of one before.

Suppose you had a planet with a generally low temperature and high gravity—three times that of Earth. This planet is engaged year-round in a perpetual ice age, with perhaps some water unfrozen on land near the equator in the summer. The difference in gravity would have little effect on the skeletal and locomotive systems of any marine form of life because the animal's density would be approximately that of the water in which it lives.

The outrigger ribbon fish (below, left) is a filter-feeding fish from such a planet. Its large gills are used mainly for sieving small plankton from the water. Respiratory exchange of gases (that is, breathing) occurs through the animal's skin and fins. Its mouth is surrounded by a row of chemically and tactilely sensitive tentacles used to locate food organisms, and its long outriggers are also sensitive to the touch of such small animals. If the ribbon fish swims by a cloud of prey, the long outriggers may brush against the outer organisms in the cloud and the fish then turns and swims into its prey, mouth agape.

The ribbon fish's six eyes are rudimentary and primarily sensitive to differences in dark and light. A shadow falling on its eyes stimulates the fish to dive toward the relative safety of the bottom.

Outrigger ribbon fish filters plankton through gills from cold seas. Armlike projections are sensitive to the touch of its prey.

Bandersnatch is an unfastidious herbivore. It sees and smells

Inspired by Larry Niven's science-fiction novel, *World of Ptaavs,* the bandersnatch (below, center) may satisfy any cravings for the thoroughly exotic. Its mass is equivalent to that of a 10,000-pound Earth animal such as a large elephant, but on its temperate, high-gravity planet, the bandersnatch weighs 30,000 pounds. For support, the animal is multilegged but, due to its great weight, relatively slow. A "salad-type" herbivore, it will eat any plant it comes across in its stately peregrinations, rather than searching out specific tasty or highly nutritious items.

Its large mouth is equipped with prehensile, petal-shaped lips and is located on the front of its body. The grinding apparatus consists of a series of vertical tooth-bearing bars. The large projection in front is a sensory stalk and bears organs of sight and smell, as well as serving as a primary integrating center for sensory stimuli. What we would think of as hearing is accomplished by a row of pressure-sensitive receptors that run the length of the animal's body, similar to the system seen in earthly fish and salamanders. Such a hearing system works for land animals on this high-gravity planet because its denser atmosphere is comparable to the density of water. As a hearing system, the bandersnatch's rows of receptors are well suited for ascertaining the direction from which sounds emanate but not as useful as an ear in detecting the changes in the quality of sound waves.

The bandersnatch breathes through a multiple-opening, tracheal breathing system. In its smaller ancestors, this system was adequate to supply oxygen to all body tissues, but, in the larger animal, the system has been supplemented by lung sacs at the ends of the trachea as well as a closed circulatory system. As in earthly lungfish, the uptake of oxygen and the release of waste gas (carbon dioxide) are separated. In lungfish, oxygen is absorbed through the lungs and carbon dioxide is excreted through the gills. In the bandersnatch, gas absorption occurs via diffusion in the trachea; nitrogen and carbon dioxide are excreted through the skin, with little loss of water. The high humidity of the planet also reduces the problem of dehydration. Each of the five body segments has a separate tracheal segment and the exhalations are timed so that the net effect of all this plumbing is to give the animal the appearance of continuously taking a long breath. It proceeds slowly through the landscape with a characteristic huffing sound.

While the bandersnatch placidly plies the landmasses of its planet, in the seas is the large diving reptile called the plesiornis (below, right). Its ancestors were short-tailed, four-legged land animals but, as has been the case on Earth, they returned to the bountiful habitat of the sea, drawn by the vast numbers of available prey.

On Earth, most of the known marine reptiles evolved from terrestrial ancestors with long tails, and so most marine reptiles are tail-swimmers—crocodiles, ichthyosaurs, sea snakes. There are two other adaptations for swimming that a sea-returning land verte-

with the stalk; its mouth is found at the front of its body.

Sharing bandersnatch's high-gravity world is a huge diving reptile, plesiornis, that paddles with hind legs.

Red hop-flier weighs eight pounds on its low-gravity planet. It achieves take-off by using strong hind legs and, just as a grasshopper's, its flights are short.

brate starting off with four limbs may have. Fore-footed paddling is seen in seals, penguins and sea turtles, and hind-foot paddling is seen in sea lions and many diving birds. The plesiornis has a locomotive style unknown among earthly reptiles—it is a hind-foot paddler.

Differences in gravity and temperature directly affect the amount of oxygen dissolved in water, and the high atmospheric pressure on the planet of the plesiornis and the bandersnatch gives the big diving reptile a distinct advantage over an earthly diver of the same size. Each breath will have ten times the oxygen content as on Earth, so the animal can stay under for much longer dives without any elaborate breathing equipment. Of course, owing to the buoying effect of water, there is no more work involved in diving on the heavy-gravity planet than there would be on Earth; no more energy is required.

Humankind evolved as land animals, but human children and some adults continually dream of being able to fly. And even though some humans evolved into engineers and inventors who have permitted us to take a certain kind of flying for granted, the capacity to spread one's limbs and take to the air by oneself still eludes human grasp. If flying through the Earth's atmosphere at will remains a mysterious and wonderful dream (perhaps the ultimate explanation for the existence of bird watchers and butterfly collectors), then what would it be like to fly on another planet? What kind of creatures would have accomplished it?

The flying animals such as the three pictured above were the greatest challenge for me. Frankly, I didn't know much about flight when I started the project and, although I know more now, I still don't know as much as I'd like to.

One thing I learned is that flying animals have to be very well engineered or they don't fly: It takes ten times as much energy to fly somewhere as to walk there (unless a change of altitude is involved in the walking route). In addition, it takes more power to fly slowly or rapidly than it takes to fly at some intermediate cruising speed. The factor that places an upper size limit on earthly fliers is not that of the strength of the materials available to build wings from, but the ability of their muscles to generate enough power to get off the ground. An albatross can generate enough power in its wing muscles to take off into the wind if the wind has a ground speed of 20 miles per hour, but it cannot take off in still air. The minimum speed at which an animal or airplane can fly is referred to as the stall speed.

For high-gravity planets I assume an atmospheric pressure ten times that of Earth's at sea level, even though they had only three times the Earth's gravity. This assumption is not unwarranted. The amount of atmosphere a planet has is relatively independent of the mass of its rocky core. If this assumption isn't made, the flying animals that are possible are also small and uninteresting. The much denser atmosphere combined with a slightly greater gravitational attraction improves the lift force of any particular type of wing. This means that, despite their greater weight, relatively large animals could fly on the high-gravity planets. In essence the denser atmosphere reduces the stall speed of the animals. The greater force of the winds on a high-gravity planet also facilitates flight in large animals.

The great filter bat (opposite, right) has an unusual ecological niche. It lives on a tropical, high-gravity planet and it is an aerial filter feeder. The large oval mouth has a specialized series of slits and featherlike

Gaudy pattern of butterfly lizard's two-foot wing span attracts mates and warns predators that it is poisonous. It leaps well in a low-gravity world.

Great filter bat weighs 150 pounds and glides over vegetation, sieving insects from air. The dense atmosphere of high-gravity world permits it to fly.

filters at the corners. As the "bat" sweeps and glides above the dense tropical vegetation, a continuous flow of insect-bearing air passes into its mouth and out through the filters. The insects, against their best interests, remain in the filters to be lapped away by periodic sweeps of the bat's tongue. The animal has poorly developed eyes but a well-developed sonar system. The large humps covering the wing muscles also house the sonar receptors. In the dense, turbid atmosphere of its home world, sonar is more useful than vision. Not only is light transmission reduced and distorted by the dense atmosphere, but the speed of sound is greater because of the increased pressure. The filter bat has a wingspan of 50 feet and a weight of 150 pounds on its native world.

The red hop-flier (above, left) is a flying animal from a low-gravity world with a dry, desertlike climate. The thin air of its small world poses two major adaptive challenges. Firstly, a flying animal unprotected by shade dries out more easily than an animal hiding in the underbrush. Secondly, the thin air requires both large wing area and a relatively great stall speed. The lower gravity only partially compensates for the thinner air. The hop-flier attains its initial takeoff velocity by using its powerful hind legs and, as with an Earth grasshopper, its flights are not very long. The wing membranes are well supplied with blood vessels and serve as a radiative surface for the body heat generated during flight. The scaled reptilian skin is ideally adapted to resist dehydration.

The animal is an active predator; on its home planet it weighs about eight pounds.

The butterfly lizard (above, center) is an 11-inch-long flying reptile from a temperate, low-gravity planet. It has a two-foot wingspan and feeds upon insects and small vertebrates which it stalks and catches on the ground as well as in the air. The gaudy wings serve as a recognition signal during the breeding season and also as a warning to predators that the animal is poisonous. Similar bright warning colors are seen on distasteful or poisonous Earth animals. The wings are supported by a cartilagenous skeleton of greatly modified dermal scales. The flight musculature is located entirely on the shoulders and ribs. In contrast to the condition found in butterflies, the lizard's wings are composed of living tissue. They have an active blood supply and can be repaired if torn. The low gravity of the planet combined with well-developed legs enables the beast to be a relatively good leaper.

The great filter bat, the red hop-flier and the butterfly lizard hardly exhaust the potentialities for flight adaptations on low- and high-gravity planets. Think for a minute about the great red sac on a male frigate bird's throat, which he can inflate at will during the breeding season. It has nothing to do with his ability to fly but it certainly reminds one of a balloon. And having thought of balloons, think of other lighter-than-air craft, such as dirigibles. Could evolution have produced such a flight mechanism naturally? Why not?

I designed an airship beast (see next page), a herbivore from a planet with cold winters and heavy gravity, the same world as that of the ribbon fish. The airship beast weighs 200 pounds and it flies only twice a year when it migrates from the summer pasture of one hemisphere to the summer pastures of the other hemisphere. A few weeks before migrating, the animal begins to fill its airbag with hydrogen produced as a metabolic byproduct of the breakdown of sugar.

Much of the success of its aerial travel is due to the powerful winds of its high-gravity planet, but airship beasts are prone to many dangers during their migration: Thunder and lightning storms are common on high-gravity worlds and they risk ignition of the hydrogen as with the *Hindenburg;* aerial predators attempt to tear the gas bag in order to bring their prey down to earth (as it were); and, in addition, they may be blown off course. With such hazards, and with their relatively feeble wings and low food stores, many never reach the summer feeding grounds. However, the large food supply available to them as migratory herbivores gives them a great reproductive potential and the species survives despite the terrific mortality among its individual members.

Finally, the squish or shark-squid (opposite) is a predacious marine organism from the temperate, low-gravity world, also inhabited by the butterfly lizard. It is a true aquatic form, not the descendent of terrestrial animals which reentered the sea. The large gills are an adaptation to the low level of oxygen in the waters it inhabits. Not only does its planet's thin atmosphere reduce the amount of oxygen that the water will contain, but warm waters also hold relatively less oxygen than do colder waters.

The squish uses a dual mode of locomotion: the forward facing gill clefts are also the intake ports for a jet propulsion system used in extremely rapid travel. The water, under pressure, is pumped backward through the gills and then out an exit slit (hidden by the tail fin in the picture). A small amount of this high-pressure water is diverted to maintain the rigidity of the tentacles during the jet spurt. The tentacles can be stiffened by this hydraulic skeleton so that they form a compact streamlined cone. During slow swimming or when the tentacles are in use the animal propels itself by strokes of its tail. The temperate oceans in which the squish lives have many levels of predators and a complex food net. The squish is a predator on large fish, not a filter feeder.

These, then, are some animals for an interstellar zoo. Though they almost certainly don't exist anywhere in the universe, they *could*—under the right circumstances. Anyway, I am rather fond of them because they are mine. There are 17 others in the exhibit including the toad face, a birdlike flying insect; the Cthulu "larva," a bottom dwelling, largely motionless vertebrate, the main characteristic of which is that it is disgusting; the 90-foot long, hermaphroditic basilocetus, which lives alone in frigid seas; the similarly solitary legadillo, a huge, armored, multilegged herbivore that feeds on desert plants on a high-gravity planet; the nocturnal owl cat that is noteworthy for its feathery fur; a centaurlike creature, one of the few intelligent animals in the exhibit, which evolved as did the hexalope from multilegged marine ancestors; and the two-headed, three-legged puppeteer, whose hind foot is a powerful weapon if a bit of an embarrassment in locomotion.

Of course, there are many more variables one could use and so many more types of planets and, therefore, of animals. But until we get to other planets, it is fun to speculate about what life forms we might find out there. It is a game anyone can play and it is not just a harmless pastime. Such speculation can perhaps help us better understand how the Earth's environment has shaped the creatures that dwell upon it, including us.

The herbivorous airship beast inflates itself with hydrogen and is blown by strong winds in dangerous migrations on a high-gravity planet.

The shark-squid, a highly efficient marine predator, can swim with its tail or, for short, fast bursts, by hydraulic pumping of water through its large gills.

By Thomas Dozier

The controversy on whereabouts of Columbus' body

After 468 years, the bones of the Admiral seem to have traveled almost as far as they did in life; no one is certain where they all rest

In the Mediterranean world from which he hailed and in the New World to which he sailed, Christopher Columbus probably is honored by more monuments and place names than any other man in history. Yet he remains an enigma. Even after repeated crossings of the Atlantic, he insisted that when he was traveling westward he was sailing uphill. He also concluded from the fact that the weather became progressively warmer from East to West that he was proceeding upwards ever nearer the sun. And, far from proving that the Earth is round, he decided it was pear-shaped.

Columbus died in semidisgrace and poverty in Valladolid, Spain, May 20, 1506. What happened to his mortal remains after that is as much of a puzzle as anything connected with his life.

I first became aware of the mystery of the whereabouts of Columbus' bones a dozen or so years ago. In Spain I had visited the great Gothic pile of the Seville cathedral and stood in awe beneath the elevated tomb (p. 98) of Don Cristóbal Colón, meditating on the greatness of the man whose bones rested in this exalted setting and not bothering over the curious detail in the guidebooks that listed the tomb as being a work of the "late 19th century." My reason subconsciously told me that Columbus must have been buried before the 19th century, but my emotion at standing beneath the actual remains of the Grand Admiral left no room for questioning. It was only when I visited Cuba in 1959 and was shown the tomb where Columbus *had been* buried that it became clear that his body had been shipped from Havana to Seville.

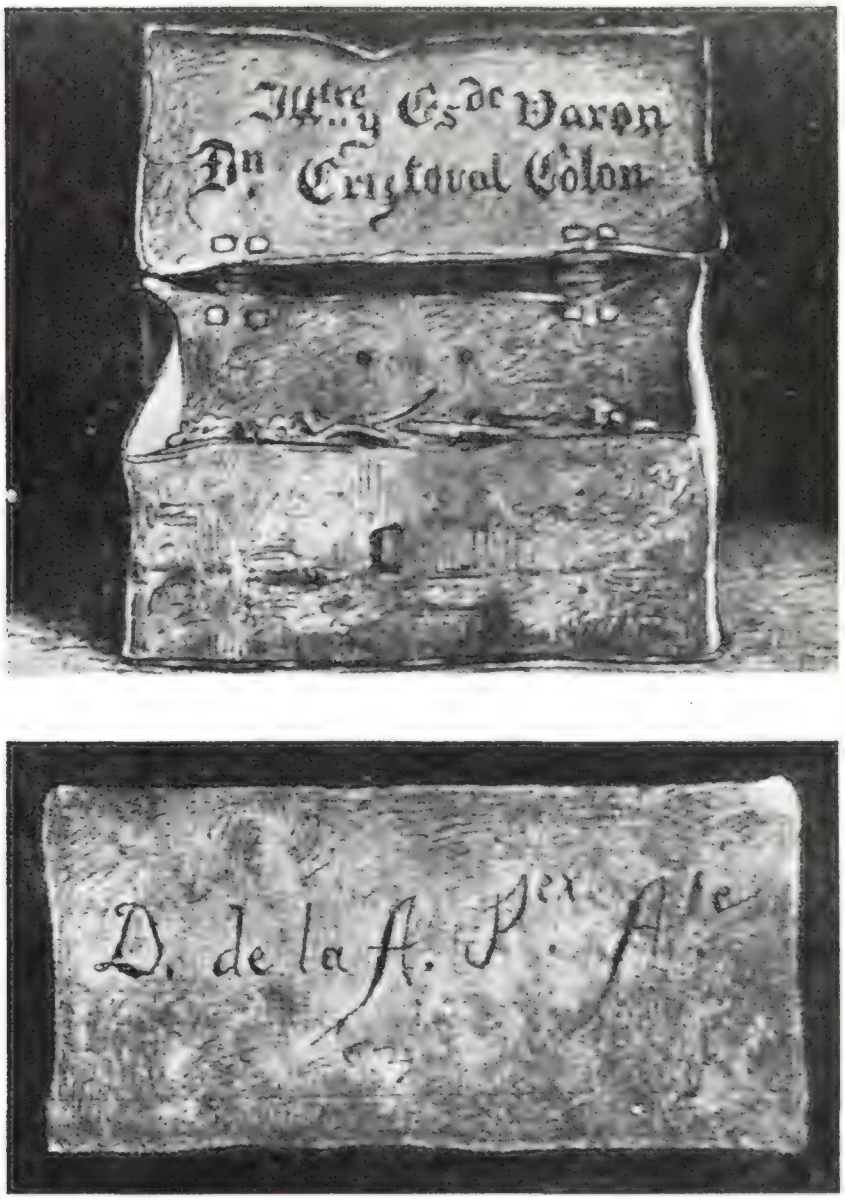
A few months later in what was then Ciudad Trujillo in the Dominican Republic, I was taken by one of the dictator's aides to the Santo Domingo cathedral and shown the tomb of Columbus. "This," said my military escort, "is where the Grand Admiral is *really* buried." I resolved someday to look into the matter.

Painting owned by Notre Dame University depicts death scene of Christopher Columbus

Thomas Dozier, a veteran correspondent for Time *and* Life, *now free-lances in Spain.*

on May 20, 1506, in Valladolid, Spain.
The date and place are probably authentic.

That opportunity came many years later. On a return trip to Seville, I met Don José de la Peña, who had just retired as Director-General of the Archive of the Indies, the huge library where all available documents relating to the discovery and conquest of America are kept by the Spaniards. It was quite natural that the mystery of Columbus should come up. Where, I asked, was the real tomb of the Admiral? "Ah," said Don José as we sipped dry sherry in an outdoor café, "that is a subject of considerable complication."



Lead coffin found in cathedral in Santo Domingo in 1877 contained bones. Inscription inside lid (top) could mean "Illustrious and Esteemed Baron, Don Cristóbal Colón." Letters on outside (directly above) may stand for *Descubridor* (Discoverer) *de la America, Primer Almirante* (First Admiral).

This metal chest now holds the fragile lead coffin in the cathedral at Santo Domingo.

Columbus' bones

Bones were believed moved to cathedral in Havana until the Santo Domingo coffin was discovered.

It is reasonably certain that Columbus died on May 20, 1506, in Valladolid. A Requiem Mass was said for him, and he was temporarily buried in the Church of San Francisco in this Spanish city. How long the body lay in Valladolid is not certain. Most historians, including José de la Peña, say that in 1509, three years after the Admiral's death, his eldest son, Diego, moved his father's remains from Valladolid to the Carthusian monastery of Las Cuevas in Triana, a quarter of Seville.

It is about 400 miles from Valladolid to Seville, a wearisome journey for the aged and infirm Columbus when he did it on muleback in 1505, and also a torturous distance for Diego to travel with his father's remains in 1509. But the posthumous wanderings were just beginning. Some 30 years later—the *Encyclopaedia Britannica* says flatly it was in 1542, José de la Peña says the date is uncertain—Columbus' bones were exhumed, along with those of his son Diego, by Diego's widow, Doña Maria de Toledo, and shipped across the Atlantic to Hispaniola (today shared by the Dominican Republic and Haiti), which the Admiral had discovered on his epic first voyage.

Old records show that in 1537 Maria de Toledo obtained royal permission to establish a burial place for the Columbus family in the main chapel of the cathedral of Santo Domingo; in addition to the discoverer and his son Diego, other members of the family buried there in the 16th century were Doña Maria herself, the Admiral's nephews, Christopher and Luis—and, according to de la Peña, a grandson also named Christopher. Some historians also include the Admiral's two brothers, Bartholomé and Diego, but de la Peña insists that brother Diego's remains were exhumed in Triana in 1950.

Don José also discounts one of the wilder theories about the Grand Admiral's bones: that the skeleton exhumed in 1950 was really that of Christopher, his daughter-in-law having removed the wrong bones.

The amateur bone-tracer must make certain assumptions for himself: first, that Doña Maria took the right bones to Santo Domingo some time between 1537 and 1542. Assuming that, there is then no reason to doubt that the Admiral was reinterred in the main chapel (on the "Gospel" side of the altar) of the Santo Domingo cathedral and that there he remained for almost two-and-a-half centuries, slowly dissolving into dust and fragments alongside the remains of assorted relatives.

In 1795 Spain ceded Hispaniola to France. Local Spanish authorities and one archbishop Portillo, spurred by an officer of the Armada, decided that the remains of their beloved Admiral must not fall into the hands of the French. An exhumation was hurriedly arranged, and a coffin containing "a number of bones, and a quantity of mould" set sail for Cuba, a colony still safely Spanish. There they were ceremoniously reinterred in a vault of the cathedral in Havana. Across the vault was mounted a relief image of the Admiral with an inscription: "O remains and image of the great Columbus, for a thousand ages rest secure in this urn and in the remembrance of our nation."

Assuming the archbishop took the right dust and bones, the inscription writer proved to be too much of an optimist. Just over a century later, the Admiral was again menaced by the fortunes of war and revolution. In 1898, with the help of the United States, Cuba gained its independence from Spain. Determined action was necessary to prevent the Admiral's bones from falling into irreverent hands. This time, Columbus' descendant, the Duke of Veragua, arranged the ex-

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Rebuilt cathedral at Santo Domingo,
in Dominican Republic, contains 1877 coffin.

humation from Havana's cathedral and the transfer of his distinguished ancestor's remains to Seville, a city unlikely ever to be taken over by non-Spaniards. With the agreement of the Cubans, the bones that had been transferred from Santo Domingo in 1795 were placed aboard a Spanish destroyer bound for Seville, where they were finally sealed in the monument built to contain them in the great transept of the cathedral.

So far, so good—as long as we assume that in each exhumation and reburial it was indeed the remains of Christopher Columbus. From all the evidence, it is safe to say that this was the case up to the point of transfer from Santo Domingo to Havana in 1795.

By that time, the cathedral in Santo Domingo had been allowed to fall into a state of near ruin, and the inscriptions on the tombs of the various members of the Columbus family were all but obliterated. Rebuilding the cathedral in 1877, Dominican workmen discovered on the Gospel side of the main altar several coffins of the Columbus family. They were in poor condition, but on the outside of one were found the initials "CCA" inscribed in Gothic characters. The letters, the Dominicans excitedly decided, stood for *Cristóbal Colón, Almirante* (p. 93). Other abbreviated inscriptions were found in the debris. The most important read: *"Illtre. y Esdo. Varon Dn. Criztoval Colon,"* which could be rendered: "Illustrious and Esteemed Baron, Don Cristóbal Colón." Another legend, somewhat more mysterious, appeared as *"Ua pte de los r tos del p mer Al t D Cris toval Colon Des r."* which might mean in Spanish *"Urna Patente de los Restos del primer Almirante Cristóbal Colón Descubridor,"* or in English: "True Urn of the Remains of the First Admiral Christopher Columbus, Discoverer."

Proudly the Dominicans announced that they had discovered the true grave of Columbus and that the bones removed 80 years earlier and temporarily enshrined in the cathedral of Havana were those of the wrong man. The Spanish indignantly declared the discovery a hoax.

The Dominicans proceeded to build a new shrine to guard the remains of *their* Columbus, placing the corroded lead coffin with its handful of dust and a few fragments of bones in a heavy metal chest, the sides of which fold down to reveal its precious contents. Richard Halliburton, in his book *Seven League Boots* (1935), recounts being shown the relic:

"I had a profound feeling of awe when these actual bones of Columbus were revealed," wrote Halliburton.

"The lead box is seventeen inches long by nine inches square, and on the side the initials CCA—Cristobal Colon Almirante—stand out boldly. . . . Of Columbus' remains only a few bones are still intact; the rest have crumbled to dust which half fills the receptacle. The skull has distintegrated entirely, or else it was never there."

Never was there? Why not? And as for the skull's having disintegrated, this seems unlikely. I have the skull of a young girl of a pre-Incaic civilization in Peru that an archaeologist assures me is at least 1,000 years old; except for a few missing teeth it is perfect.

Adventurer Halliburton's belief in the authenticity of the Santo Domingo Columbus has been shared by numerous writers and serious scholars, but the Span-

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The reasons for using aluminum are found in aluminum itself.

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iards have never budged from their insistence that their Seville Columbus is the right one. Thus for almost a century the world of Columbian studies has been split between the advocates of the 1795 theory (the true bones to Havana and finally to Seville) and those who favor the 1877 theory—the remains were never removed from Santo Domingo.

Now, Don José de la Peña comes up with an explanation of the mystery that is refreshingly simple. After a lifetime of study (the results of which he hopes to publish in book form), Don José has concluded that the mortal dust of the Great Explorer rests in *both* Santo Domingo and in Seville. In the hurried excavation of the ruined tombs in the Santo Domingo cathedral in 1795, Archbishop Portillo and his helpers took only a part of the Admiral's bones and dust, inseparably mixed with the remains of son Diego and probably of other members of the Columbus family, for reburial in the cathedral in Havana. Specifically, Don José believes that the first words of the acronym found with the caskets in 1877 mean *"Una parte"* ("a part") rather than *"Urna patente"* ("true urn"), thus making the inscription read "A part of the remains of the Admiral Christopher Columbus." This suggests that there was a deliberate sharing of the remains.

As for the inscriptions on and inside the coffin now preserved in Santo Domingo, de la Peña is suspicious that these might well be 19th-century reproductions of what local artisans imagined 16th-century Gothic lettering should look like. He is particularly skeptical about the use of abbreviations, and says "The use of acronyms smacks more of the 20th century."

Says Don José: "The truth is that in the noble struggle between two patriotic factions, Santo Domingo decided to retain part of the bones and let the remainder be shipped away. Columbus belongs to America, but he also belongs to Spain. May he therefore rest in peace both in Santo Domingo and in Seville."

Columbus' remains may yet lie in this splendid tomb in the cathedral at Seville, where they were supposedly reinterred in 1899 . . .

. . . or all or part may rest in the memorial made for them in Santo Domingo's cathedral. Historians still must take their choice.

Mammoth grasshopper looms above neat rows of seed packages in pesticide exhibit in the U.S. Pavilion.

Soviet concern for environment is depicted in this section and others of the panoramic Russian display, the largest foreign pavilion at Spokane and center for 200 scientists and officials from the USSR.

Spokane studies the environment

When it ends next month, the World's Fair may not only have made a profit but it will bring to the city a much-needed park

Photographs by Robert W. Kelley

An unsung success of a difficult year has been the official World's Fair going on in Spokane, Washington, since May—Expo '74. The fair will certainly have attracted enough visitors (5.5 million) to break even when it closes its doors next month. Indeed, it bids fair to make a profit.

Such a cosmopolitan success may seem unlikely for this inland city which, with a population of 185,000, is the smallest ever to produce a fair sanctioned by the Bureau of International Expositions in Paris. One factor is that city businessmen taxed themselves to pay for clearing the site of old railroads, believing that its location in the middle of Spokane (see p. 102) could be the key to rejuvenating the city. Another factor is the theme. "The Earth does not belong to man, man belongs to the Earth," proclaims the U.S. Pavilion. Corporations with environmental messages flocked to Spokane, as did nine foreign countries, not to mention such specialized groups as the Mormons.

Professional environmentalists have held symposia on everything from energy and agriculture to human settlements. And in a 3.5-acre park, the Smithsonian Institution is presenting a six-month-long folk life festival called "The Northwest: A Gift of the Earth."

Vertigo and the Uncommon Cold.

Dizziness, nausea, falling — they're results of Meniere's Disease. The old treatment was inner ear surgery which cured the vertigo . . . but killed the patient's hearing.

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Tentlike U.S. Pavilion (upper left) rises beside Russian exhibit on former industrial wasteland, future Spokane park.

Plate 12

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Text by Patricia Easterla
Photographs by David Easterla

Rare glimpses of newborn bats

Until these photographs were taken, few people had ever seen the spotted bat and probably no one had seen its young

We sit by a small water hole in the Texas-Chihuahua desert and breathe a sigh of relief as the cool shade of night slips over us. Beside us, reaching a height of eight feet, stretches a mist net, finely woven and hard to detect. On this night two factors have made our net more invisible—it is the dark of the moon and the night is windless. Sagging pockets hang empty between strands of the netting, awaiting the capture of bats.

The night moves on, and it is well past midnight. In the distance we hear a distinctive ticking and are immediately alert.

"It's a spotted bat," Dave whispers, "I'm sure."

Suddenly the ticking is right at our ears and has increased in tempo.

"It's hit the net," Dave yells and hurls himself into the water to grab the bat before it can injure itself.

We are trapping them so that we can make pictures. Bats are difficult to photograph at best: elusive nocturnal creatures that move faster than the night-blind eye of a human can follow. Obviously, the rarer the bat the harder it is to photograph, because first you have to find it. The pictures on these pages are unusual because they are of the (so far as we have been able to tell) never-before-seen, never-photographed young of two rare bats.

We found them in Big Bend National Park in southwest Texas, where we spend our summers. The spotted bat is one of the rarest and most elusive of North American bats. Large, pink ears, bigger than those of any other North American bat, stand erect above a body characterized by three large, white spots on a dorsal background of black. The bat averages just under five inches from tail tip to nose tip with the ears adding another 1⅞ inches. The bat is a swift flier, and its call is a series of ticking and clicking noises.

Large, veined ear dominates the diminutive visage of this baby spotted bat, embraced in mother's wing.

In the beam of our flashlight, the pink ears and white spots of the captured bat stand out. With gentle fingers Dave strokes the lovely creature's fur. Then his fingers quicken as with a biologist's instinct he begins to probe the bat's abdomen.

He cannot contain the excitement in his voice as he announces, "She's pregnant—as round as a ripe plum."

That announcement makes this spotted bat unique. Since its discovery in the 1890s in California, no

Dr. Easterla teaches biology at Northwest Missouri State University. His wife is a nature writer.

Enlarged photograph was made within a day of birth. Baby, only two inches long, weighed four grams.

young of the species is known to have been seen.

Our summer home becomes a maternity ward. The spotted bat adjusts well to the temperature and cage we have provided for her. We and our two young sons spend much time collecting moths. Their wings, heads and legs removed, the bat delicately chews and swallows the moths, spitting out the indigestible parts. On several occasions we see her sip water at the bottom of the cage.

Finally, the birth is accomplished: A single, wet, male with the umbilical cord still attached clings to his mother.

The baby weighs four grams and possesses large, floppy ears, hinting of the giant ears of the adult. But the most prominent feature of the baby is its feet. Although the hairless body and closed eyes suggest great frailty, the feet are almost as well developed as those

Not quite five inches long, mother spotted bat shields baby with partly unfolded wings.

of the adult. It is immediately obvious that these strong feet are the baby's link with survival. With them he will spend the early part of his life clinging to his mother or to the interior of a cliff crevice while she is away feeding.

Within a few hours the baby is accepted by the mother and is nursing. For the next couple of days the baby nurses almost constantly. Sometimes it is impossible to get the baby to release his hold before removing the mother to feed her the small moths.

Although the young bat is small in size, we discover that his vocal capacity is not small. Whenever hungry or alarmed, he does not hesitate to express himself by emitting loud, high-pitched calls. We find ourselves responding to his calls, curious as to what the problem might be and then to make sure the mother is caring for him properly.

The mother is very gentle and protective of her young, and on returning after her meals to the cage and her baby, she first smells him and then licks his face, ears, wings and back. Sometimes she gently nibbles his ears. After the smelling and licking greeting, the mother usually follows a particular behavioral pattern in the cage for allowing the baby to attach again. While upside down she approaches the side of the baby and straddles him, pulling him into her abdomen with her wings, sometimes using the wing hooks. He then excitedly searches for the nipple. Often when the mother and baby are hanging upside down and resting, she shields the baby with partially outstretched wings.

We had less success with a western mastiff bat which also gave birth to a single baby in captivity. The western mastiff bat is uncommon, limited in the United States to the Southwest and seen by few people. It is North America's largest bat, with a wingspan of about 20 inches. A unique characteristic of this bat is that because of its great body weight, it cannot take off from the ground and, in fact, must have a minimum height of five or six feet from which to drop. Therefore, the normal roosts of the western mastiff bat are high cliff overhangs.

The mother western mastiff bat showed little interest in her young born in captivity. After a few exploratory sniffs, she abandoned the youngster. The contrast in behavior of these two species in acceptance of their young is undoubtedly an individual reaction and not a species characteristic. Also, an animal's behavior in captivity cannot always be assumed to duplicate behavior in the wild.

Photographing the spotted bat with her young presented problems. We wanted to photograph them in natural sunlight but did not want to overexpose the bats to the sunlight, nor did we wish to risk taking them outside, fearing that the mother might fly away. And we realized that overhandling could cause damage to the bats or cause the mother to reject her young.

We discovered that one corner window in our summer home allows full sunlight to enter during a short period, and we rigged a line across it. When all was in readiness, we would hook the feet of the female (with her clinging baby) onto the line. Between shots, we shaded the two bats.

A major problem was to prevent the mother bat from taking flight. Despite all efforts, there were times when she suddenly would cast herself off the line and fly around the room. The baby was never dropped and the mother seemed unhindered by the additional weight. Undoubtedly the mother does not normally fly with the young, but if necessary in the wild she could move it to a different roost. Probably she is able to command the baby in some unknown way to hold or release the teat.

The inability of the western mastiff bat to launch herself from heights less than five feet allowed us to photograph it outside. Again, overexposure to sun was a critical factor. With our sons, David James and Todd, holding each end of a small limb, the mother bat was placed on the limb and the baby gently attached to her. The mother clung to the limb and never tried to fly away.

There are those who don't like bats. Having the opportunity to watch the spotted bat caring for her young might change that. As we watched the mother gently lick and nuzzle her baby, we could only hope that as long as there is a night to flit through, the spotted bat will be there.

In captivity, baby of North America's largest bat species, the western mastiff, clings to its mother.

By Martin Williams

Scott Joplin, the ragtime king, rules once more

His current popularity owes something to a film, but more to musicians and scholars who regard him as an important composer

There are only a few known photographs of Joplin. This one, about 1904, appeared on a sheet-music cover.

Early on a summer evening in 1899, a man named John Stark, proprietor of a Sedalia, Missouri, music store, dropped in at the local Maple Leaf Club for an after-work beer. From across the large room, with its ornately carved walnut bar, its casually integrated black and white clientele, and its gambling and pool tables, he heard a pianist playing a piece that quickly attracted his attention. It was, he knew, in the midwest style then already being called "ragtime." Stark crossed over to speak to the man at the piano.

That pianist was a black man of some local fame named Scott Joplin. Complimented by Stark, he said the piece he was playing was something of his own, and, yes, he would be happy to stop by Stark's shop the following day with a copy of it.

The story is still told among the Stark family heirs of how Joplin, with a small boy in tow, entered the shop the next day with a manuscript copy of *Maple Leaf Rag*, sat down at the keyboard and proceeded to play his piece while the small boy danced, or (in the phrase of the times) "stepped it off." Stark's captivation continued. He agreed to publish Joplin's piece, gave him a modest advance and an agreement on royalties.

Joplin was soon confiding to a friend that the publication would make him "the king of ragtime composers." (It sold more than a million copies.) Joplin's friend and sometime collaborator, Arthur Marshall, has said that "rags were played in Sedalia before Scott Joplin settled there, but he got to making them really go." Indeed, the enormous subsequent success of *Maple Leaf Rag* gave rise to an international craze. More significantly, it gave recognition and impetus to an important movement in American music when such focus was badly needed. *Maple Leaf* became the model for ragtime composition and notation. And it was, as some music critics are beginning to testify, the first important publication of a major American composer and musician.

Ragtime. To today's listener, it is apt to present visions of sleeve garters, derby hats, and jangling, out-of-tune barroom upright pianos, or corny rickytick novelty music—diversion for the old folks. But ragtime, despite the boozy, denigrating manner in which it is all too often performed and promoted, is a considerable accomplishment, an idiom not only of worldwide popularity but of worldwide influence. And Joplin and his fellow rag composers were serious popular artists.

Mr. Williams, director of jazz programs for the Smithsonian, produced the six-record LP album of The Smithsonian Collection of Classic Jazz.

Illustrations by Dennis Simon

John Stark (left) published Joplin's first success, *Maple Leaf Rag,* named for a bar in Sedalia, Missouri.

The resurgence of interest and enthusiastic regard for Joplin's works stems in good measure from an album made in 1970 by the classical pianist Joshua Rifkin, now a musicologist at Brandeis University. The ragtime king had long been a favorite of his. Emphasizing the classical conformation and fine melodiousness of Joplin's intriguing rags, Rifkin, with no expectation of starting a renaissance, created, at the least, a best seller. In 1972 he made a second recording of Joplin's work and that moved along too.

By this time, the noted classical composer and conductor, Gunther Schuller, head of the New England Conservatory of Music, who also understands and reveres jazz, was planning a festival of American music which was to include excerpts from Joplin's opera *Treemonisha,* his most ambitious—if flawed—work. The rights to that were tied up, but Joplin authority Vera Brodsky Lawrence offered him instead Xerox copies of the *Red Back Book*—a collection of Joplin rags in commercial arrangements long thought to be lost. Mrs. Lawrence's own edition of *The Collected Piano Works of Scott Joplin,* published as a work of scholarship by the New York Public Library, has become a surprise hit in the fields of music and publishing.

Schuller's group played four of the lost rags in concert and taped them. Angel records (it was Nonesuch Records which published the Rifkin albums) asked Schuller for more, and last year Schuller and the Conservatory's Ragtime Ensemble made an album called "Red Back Book."

But it was the movies that really made ragtime widely popular again, lending it a kind of national currency. Joplin's *The Entertainer* and other rags were used by Marvin Hamlisch in the soundtrack of "The Sting." Both the film and the score won Oscars in April.

Still, even without "The Sting," and before it, in fact, interest in Joplin's work was stirring. In April 1972 the music department of Morehouse College in Atlanta sponsored an all-black performance of *Treemonisha.* Since that performance, the Filene Center at Wolf Trap Farm Park outside Washington has given both a performance of the opera and a concert of Joplin rags. The Smithsonian's Department of Performing Arts sponsored a Joplin festival in February 1973. And a number of recording companies now offer Joplin renditions.

Although ragtime gradually diminished in popularity as it gave way to jazz, and nearly died entirely in the Twenties, the memory of its music, its composers and its performers was kept alive by Rudi Blesh and Harriet Janis. Painstakingly, they rescued the facts

Joplin entered into his first marriage with high hopes but it failed and the couple soon separated.

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Ragtime grew up in the honky-tonks

from faded memories, crumbling newspaper and magazine pages to tell us almost all we know about Joplin and his musical progeny. In 1950 they published the story in *They All Played Ragtime*.

John Stark was in his late fifties when he met Joplin. He had been a farm boy, frontier homesteader, Civil War soldier (the North), ice cream vendor (it was an innovative treat then) and an itinerant reed organ salesman working out of the back of a wagon from farm to farm. The organs sold well, and led to the music shop in Sedalia (a town built around a rail center), serving people at a time when, before the phonograph, the radio or TV, they made their own music and their own entertainment. The publication of sheet music by local shops was also common in those days, and if anyone was going to publish this energetic indigenous ragtime, it would probably have

and bars of midwestern America.

to be a regional man such as Stark. The New York song publishers were still hung up on sentimental Victorian ballads, pseudo-European "light classics" and the songs of the Broadway musical theater, then only in its quasi-Viennese infancy.

John Stark's daughter Eleanor, it turned out, became an accomplished classical pianist who studied abroad and was good enough to have had a concert career at home. "Nell" Stark became one of Joplin's staunchest advocates, encouraging him even in those later times when her father's business sense as a competitive music publisher was at war with his native love of the ragtime idiom.

But this takes us a bit ahead of our story. In the years of his success after the publication of *Maple Leaf*, Joplin was almost universally described as a modest, quiet, soft-spoken, friendly man, always willing to listen to and aid other musicians. Beneath that, he was dedicated and

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Scott Joplin

determined, confident of his own talents and his musical mission.

He had been born into a family of five children in the Texas-Arkansas border town of Texarkana in 1868, when Emancipation was only recently a proclamation and not yet a fact for many freed slaves. His father was a laborer who had left slavery behind in North Carolina. His mother had been born free.

Scott gets free lessons

A natural interest in music ran high in the Joplin household. The father played the violin, the mother played banjo and sang, and various older siblings learned guitar and did some composing of their own. Scott started on guitar and bugle. By the time he was seven he had discovered the keyboard of a neighbor's piano and was showing phenomenal aptitude in working out its mysteries for himself. His father was impressed enough to scrape up the money for a second-hand instrument for the Joplin home. Soon word of the young musical prodigy had spread through the black community and into the white. There it reached the ears of a teacher, very much of the old German music-master type, who took the youngster on as a pupil for free. (In his later years, incidentally, Joplin sent his former teacher gifts of money.)

By the time Joplin was 14 his mother was dead and a great deal of friction had developed between the youngster and his father over the latter's practical insistence that his son should learn a trade.

Scott left home to ply the trade he already knew: that of playing piano. He entered a midwestern America that was still a part of the country's frontier. It was a rough, tough, bawdy existence, flowing with money often quickly won and more quickly lost, and always teeming with life. There a pianist, white or black, could find work in honky-tonks or ornate clubs, cheap brothels or opulent pleasure palaces, and in pool halls or in the touring tent shows that purported to re-create the dance halls of the gold rush era, complete with crooked gambling tables and dancing girls who, though not topless, were revealed as bottomless whenever they raised their skirts.

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Scott Joplin

In this frenetic and wonderful meeting of peoples and subcultures, there gradually evolved a strange and wonderful music—ragtime. At first, it was something simply "in the air," something that nevertheless had to happen, this mixture of African or Afro-American and European elements. But once it was established, chiefly by Joplin's efforts, and had become a popular sensation, all kinds of rags found publishers and, authentic or not, almost all of them sold. Teachers set up schools which guaranteed to have you performing the style correctly (the ad slogan, "They all laughed when I sat down at the piano," actually goes back to these establishments.)

Today, both earlier and later Afro-American styles are likely to sound pretty much alike. That is, the simple *oompah* of the early cakewalk style—reflected in such pieces as, say, *Buffalo Gals Won't You Come Out Tonight* or *Camptown Races*—the real ragtime style of the 1900s and early jazz that followed it are apt to run together. But as they came along, they seemed delightfully different.

Difference was in rhythm

The real differences among these styles (and for that matter among later styles) are, just as their catch-names indicate, differences in rhythm. And, to simplify a bit, the cakewalk had tunes which went ONE two THREE four, or perhaps ONE and TWO and THREE and FOUR. They still did some cakewalk steps to ragtime music, but ragtime was essentially a piano style and it took the cakewalk's steady *oompah* as its left-hand rhythm, while the right hand played melodies.

By the time of *Maple Leaf*, Joplin had spent years as a musical nomad in a career which has been traced with some completeness through Texas, Louisiana, and, following the Mississippi River (then, of course, the main means of transportation), to St. Louis, which was at that time a sprawling, wide-open levee town with lots of jobs and lots of pay, and therefore lots of night life.

Joplin stayed in St. Louis for eight years after 1885, until he and many another itinerant pianist were attracted to the first Chicago World's Fair (more properly the Columbian Exposition),

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Ragtime's forerunner was the cakewalk.

where competitive "cutting contests" among pianists were a common event. From there, Joplin made his first visit to Sedalia, this time holding down a cornet chair in a brass band that performed light classics, marches, and tricky arrangements. Joplin then led the Medley Quartette of singers and, in Texas, had his first publication, a sentimental waltz.

By that time there were plenty of rags around. Then, in 1897, came the publication of the *Mississippi Rag*, by W. H. Krell, and it was ironic but probably inevitable that the author of the first published rag was a white man.

Joplin, meanwhile, landed back in Sedalia. And he seems to have sensed that his own talents were coming to fruition for, in addition to earning his living in the night world, he undertook further music study at George Smith College, "an institution for Negroes" set up by the Methodist Church. It seems clear that Joplin had begun to hear things in his inner creative ear that the techniques he had so far acquired would not allow him to play or to notate. And although he earned his living in the bawdy underworld, he found himself increasingly accepted in respectable circles.

With the publication and success of *Maple Leaf Rag*, that polite acceptability increased. Joplin was able to confine himself to composition and the training of a few pupils. John Stark moved his operation to St. Louis.

I have called *Maple Leaf Rag* the model rag. Actually it, in turn, had some models. You might think of rags as a kind

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of Afro-American version of the polka, the mazurka, or the Sousa-style march. That is, they are put together out of several themes. Each theme has to be good in itself (the first needs to be a real grabber), and the relationship of one theme to the next has to be interesting. There are no variations or development sections in ragtime (as there are in jazz or so much symphonic music), but the composer has to know how to handle keys. One of the things that makes the last part of *Maple Leaf* so rousing, for instance, is that it goes back to the original key—the kind of thing a layman responds to without quite knowing what is happening to him.

Taking his first success as a model, Joplin could have ground out rag after rag on the same general pattern. That is just what many a rag man did. But not Tom Turpin, not James Scott, not Artie Matthews, who were among the best ragtime composers. And, above all, not Joplin, who continued to alternate more or less conventional rags with more experimental ones. He wrote waltzes in ragtime (*Pleasant Moments* and *Bethena* are both lovely), and a ragtime tango (*Solace*). He did an instruction book on how to play ragtime properly (he regularly entered at the top of his later works: "Note: Do Not Play This Piece Fast. It is Never Right to Play Ragtime Fast").

His dream of opera

"Joplin's ambition," wrote a contemporary interviewer, "is to shine in other spheres. He confirms that it is only a pastime to him to compose syncopated music and he longs for more arduous work. To this end he is assiduously toiling upon an opera, nearly a score of numbers of which he has already composed and which he hopes to give an early production. . . ."

The ragtime opera, *A Guest of Honor,* was produced. It was a failure with its audience and no copies of it have survived. Joplin also wrote and staged an ambitious ballet, *The Ragtime Dance,* which was likewise a failure, although the best of its themes were later reworked in a piano piece of the same name.

After staging *The Ragtime Dance* in Sedalia, Joplin had followed Stark to St. Louis. And Stark announced when he published *Sunflower Slow Drag* in 1901

"Morning glory" horns blared ragtime.

that it was composed "during the high temperature of Scott Joplin's courtship, and while he was touching ground only in the highest places . . . hold your ear to the ground while someone plays it and you will hear Scott Joplin's heartbeat." He had married Belle Hayden, sister of Scott Hayden, his collaborator on the piece. They moved into a large house, where Joplin taught and composed.

At home Belle Joplin tried to take an interest in her husband's music. She even tried to take violin lessons from her husband, but the experiment, according to his friend Arthur Marshall, "was a perfect failure" and humiliated Scott. In general, the marriage went badly, and a baby daughter died a few months after her birth. The couple separated and Scott Joplin became a vagabond again.

He appeared in Chicago, in St. Louis—it is even possible that he visited England at this time. He seemed not to know where to turn artistically either, for his more ambitious rags were not selling and his relationship with Stark grew strained.

The problem, of course, was that his success had largely depended on the attention of a public that had taken up a fad. A more stable recognition was not available to this black man pioneering an Afro-American musical art.

Then in 1909, Joplin found himself an island of stability. He was married again, to Lottie Stokes. They settled in New York, she running a theatrical boarding house on 47th Street and later in Harlem, he composing and taking a few pupils.

Joplin was seized with the ambition to write another opera—not a ragtime opera this time, but one more directly modeled on the European classics, which would

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tell a story of American blacks. He worked feverishly at it, sensing perhaps that his time was short. At the same time, this onetime gentleman became increasingly erratic, impatient, volatile, suspicious. His pianistic skills would decline one day only to return the next. He worked to the point of exhaustion. And Lottie, always a casual innkeeper, ready to be patient with a roomer hard up for the rent, became more and more casual about whom she took in and for what purposes. Eventually she was running a house of assignation to keep the Joplins alive.

In 1911 the opera, called *Treemonisha,* was finished, but Joplin could find no one to publish it. He finally published a vocal and piano score with his own money, and eventually sponsored a performance. Few people came, and fewer still liked what they saw and heard.

The opera, a curious mixture

Perhaps they were right. *Treemonisha* has been performed several times as a part of the current Joplin revival, and there are more productions in the planning. One should never fault an opera for its plot, of course, but dramaturgically Joplin had about enough action in *Treemonisha* for perhaps a single act. Musically the work seems a curious mixture of derivative Verdi, Victor Herbert, Stephen Foster, and the kind of basic black American folk dances that the composer had already so brilliantly developed into his rag compositions. *Treemonisha* seems the work of a man momentarily separated from the true nature of his talent and his achievements.

After the failure of *Treemonisha,* there was still good ragtime composition in Joplin. Joshua Rifkin has remarked particularly on the touching bitterness of *Scott Joplin's New Rag* (1912), an element heard nowhere else in his work.

There were changes taking place in American music, however, changes more legitimate than the popular debasement of Joplin's beloved ragtime. W. C. Handy was publishing his first blues pieces (but anyone who knows the effective ABC structure of, say, his *St. Louis Blues* will know of Handy's debt to Joplin). And down in New Orleans, some remarkable musicians had combined the form and

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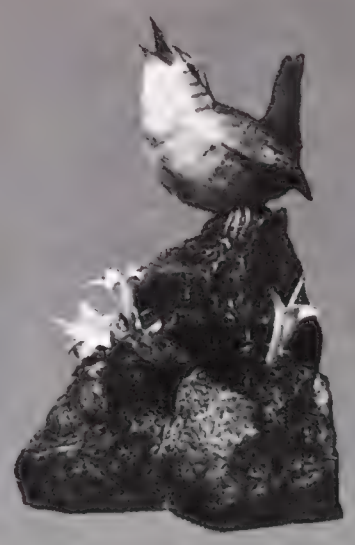

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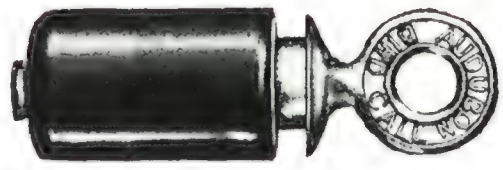

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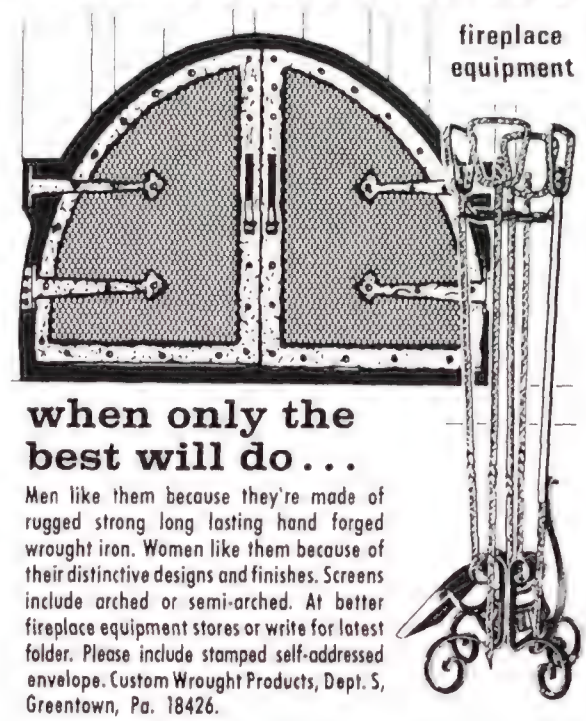

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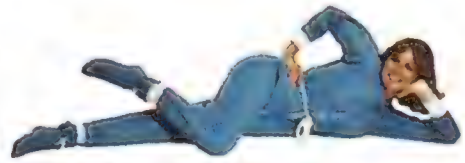

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In the autumn of 1916, Joplin was admitted to Manhattan State Hospital. There, he had some few lucid moments during which he scribbled notations and revisions, but otherwise his deterioration was complete. He died on April 1, 1917.

It is common to attribute Joplin's mental decline to the public failures of his later years, and particularly the apathy which greeted *Treemonisha*. But that interpretation contains only a partial truth. For his death certificate reveals, besides dementia paralytica-cerebral, the further complicating cause, syphilis.

We have lately become increasingly accustomed to hearing Joplin compared to Chopin, particularly in the latter's piano mazurkas and waltzes, and we are now used to being reminded that Debussy and Stravinsky and Charles Ives (among others) were interested in ragtime and tried to compose in the idiom. But Joplin is not important for such patronizing reasons. He is important because he was Joplin, a superb melodist with a fine structural sense who found a musical idiom of his own and worked splendidly with it.

John Stark wrote his epitaph in 1917. "Scott Joplin is dead. A homeless itinerant, he left his mark on American music."

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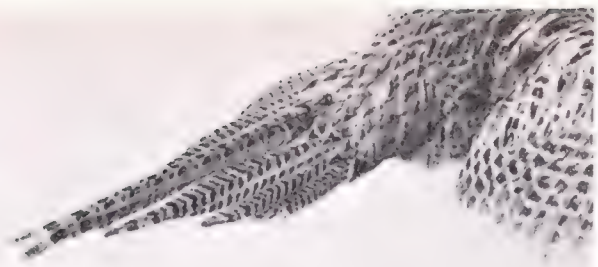

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Phenomena, comment and notes

The mathematics of murder, infants who cannot hear, hands that can, and memories of a movement's origins

This is a eulogy, calling attention to an old friend who is very much alive, if somewhat forgotten these days. It begins with an event of 12 years ago. (On the other hand, it is now ten years since the National Wilderness Act was signed into law, and for those who require decimalized intervals for celebrations, that Act will do fine.)

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Most of us realized that a new standard had been set in book publishing; few understood at the moment that a kind of revolution was under way. For with the publication of this supremely well-crafted book, conservation ceased to be a boring chapter on agriculture in fifth grade textbooks, or the province of such as bird watchers. The book was *"In Wildness is the Preservation of the World."* It was published by the then Sierra Club which meant therefore that it was the creation of David Brower.

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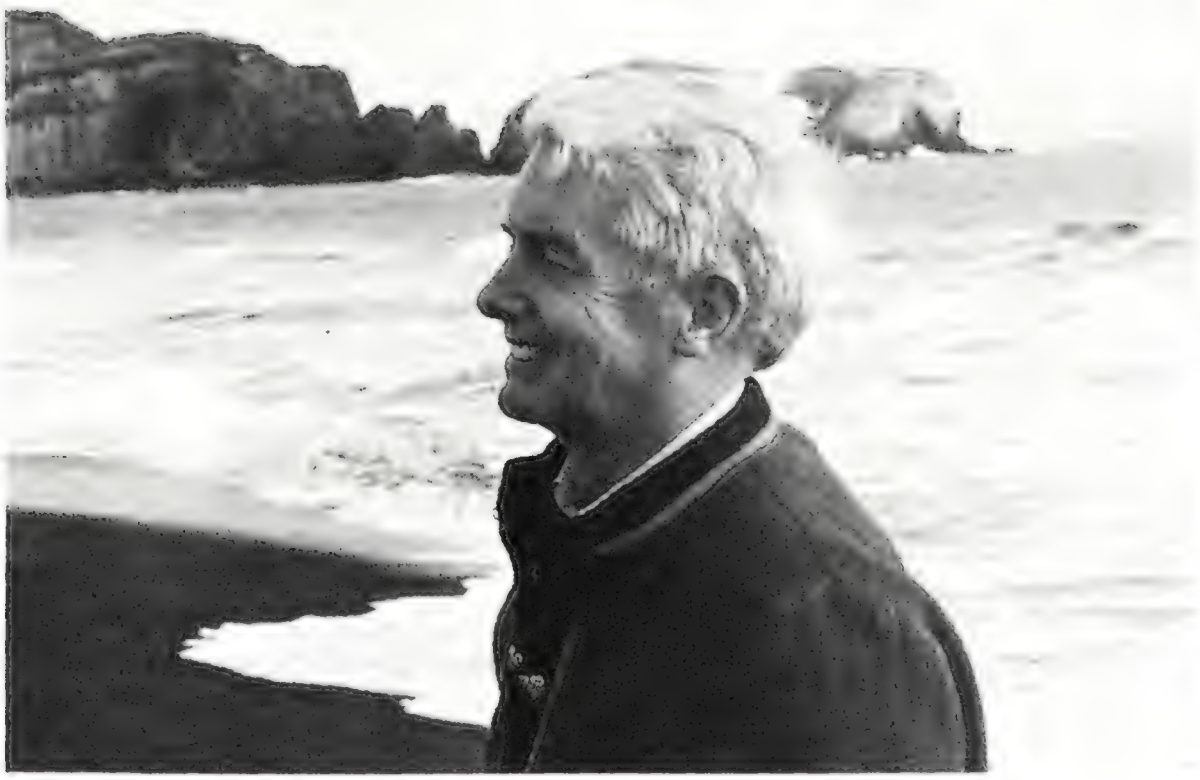

David Brower at Point Reyes National Seashore

Since then it sold more than 60,000 copies at $25 each and well over 100,000 in paperback—the set piece of what is almost certainly the most successful pamphleteering effort of recent history.

Also, in the early Sixties, people began to notice full-page ads in newspapers: It appeared that the Grand Canyon—the *Grand Canyon,* for God's sake—was about to vanish under the sweaty hand of man. Thousands of people sent in the handy coupons of protest to Congress and the White House; thousands joined up, turning the Sierra Club from a parochial band of prissily well-outfitted hikers into a feared, nationwide force.

The voice we all heard—in the books that followed *"In Wildness . . ,"* in the ads, and just about anywhere we turned—was Brower's.

Lots of people will tell you they were conservationists before it got popular and ecologists before it became a religion. They are right and in general nobody gave a damn about them.

Then Brower began his act. City folk began to sense that wilderness areas they might never see were important to them (an intuition science now confirms). A great choir of conservationists, ecologists and hikers emerged into the footlights, but Brower was already at center stage. You would see Brower, with his white hair and erect gait, looking ruddy and weathered by mountain winds even when he had spent two weeks staying up night after night in a New York printing establishment, demanding an outrageous number of revised color proofs so that the green might be true. "Right here. Dammit, can't you see?" You would find Brower surrounded by famous photographers and an army of young and old enthusiasts in his home away from home, a room in the Biltmore Hotel that was always equipped with a viewer for 35 mm. transparencies and a bottle of Tanqueray gin. You would hear Brower, an Old Testament prophet with one suit and a boyish grin, telling everyone he met, "Look, it's the only Earth we've got." Those who saw with his eyes did not require the photographs of the whole Earth made much later by astronauts from the moon.

Of course, no one burns as bright as Brower did without heating up the water he is in. Irresponsible, it was said of him. Unpredictable. Uncompromising. Naive. Impossible to work for. Egocentric. A madman. A wild man. So he was run out of the Sierra Club and before long he started a new conservation organization, Friends of the Earth, now perhaps more honored abroad than in the United States.

So what are we to make of him? More emotion than science? More a phrasemaker than a philosopher? More a lobbyist than a messiah? More a debater—slick and witty—than a reasonable man? True, all true.

What is also true is that he was right.

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And that he energized the entire subject of environment, that marvelously complex meadow so many now play in with lawyerly precision and some of Brower's righteousness, if not his humor and his perfectly transparent love.

And, of course, he saved the Grand Canyon. The *Grand Canyon*, for God's sake. A madman. A wild man.

Brower—that would be a good name for a wilderness area. A big one.

Total communication

A long battle seems just about ended in a world few of us know much about—the world of the deaf. The battle was between proponents of lipreading and those of sign language. Stated simply, one camp felt that if a child were taught to use sign language, he would never learn to talk and lipread, and he would always be separate from the rest of society. The other camp pointed out that deaf children who were taught only lipreading and other oral methods simply didn't learn very much. The best lipreaders pick up only about 25 percent of what is said; for a child born profoundly deaf or who lost his hearing before he learned any language, five percent is about all that can be expected. Until recently both camps, with the best of goodwill but without much scientific analysis, bitterly argued their positions.

In the last few years there have been a significant number of careful studies. The evidence points strongly to the benefit of using both methods along with others (called total communication), according to a new book published by Medcom Press. The book, primarily for doctors but perfectly accessible to parents, is *Deafness in Infancy and Early Childhood*, edited by Peter J. Fine, a pediatrician who became deaf as an adult and is now medical director for Washington, D.C.'s Gallaudet College.

Except for the reminder that the profoundly deaf are also profoundly human, the most striking piece of information in Dr. Fine's book is that deaf children of deaf parents make significantly higher scores on intelligence tests than deaf children of parents who can hear. The reason: Deaf children with deaf parents are more likely to begin to learn language skills—not English but sign language—early on. Thus they can also learn to read books and lips at an earlier age. In

short, because they learn to "sign" as infants they literally learn to think earlier.

Lethal math

During the 40 years since the FBI began keeping records of homicides, the rate went down until 1965, at which time it began a sharp upward climb. In 40 of 50 cities studied by Dr. Arnold Barnett, an MIT mathematician, the homicide rate has almost doubled. According to *Technology Review,* one explanation proffered is that the baby boom of the Forties and Fifties has produced a larger proportion of people between the ages of 20 and 30, which is when people are more likely to be homicidal than they are in their golden years.

Whatever the causes, the reason why people aren't more upset about all this is a matter of statistical presentation, says Dr. Barnett—and various sections use different ways of counting homicides. If someone tells you that there are *x* number of murders for each 100,000 people in your city, you can always think: Well, there are 100,000 potential victims to run through before anyone gets me. But what would you do if you lived in Boston, say, and Dr. Barnett told you that, by one moderate projection, a boy born there and continuing to live there faces a one in 71 chance of being murdered? You'd move, but where to? According to figures released in September, the murder rate is up in the suburbs.

The knotty problem of hemp

The American Library Association for the legalization of marijuana? Hardly, but according to an article in *The Ecologist* by Jack Frazier, there is some logic in taking such a position. Marijuana, of course, comes from the hemp plant, as does hashish, rope and, for nearly 2,000 years, paper.

By the early 1900s, however, wood pulp had almost completely replaced hemp (as well as flax and other fibers) in the manufacture of paper—so much so that the U.S. government grew anxious about the rapid dwindling of the nation's forests. This led to more sophisticated forest management practices, but it was also

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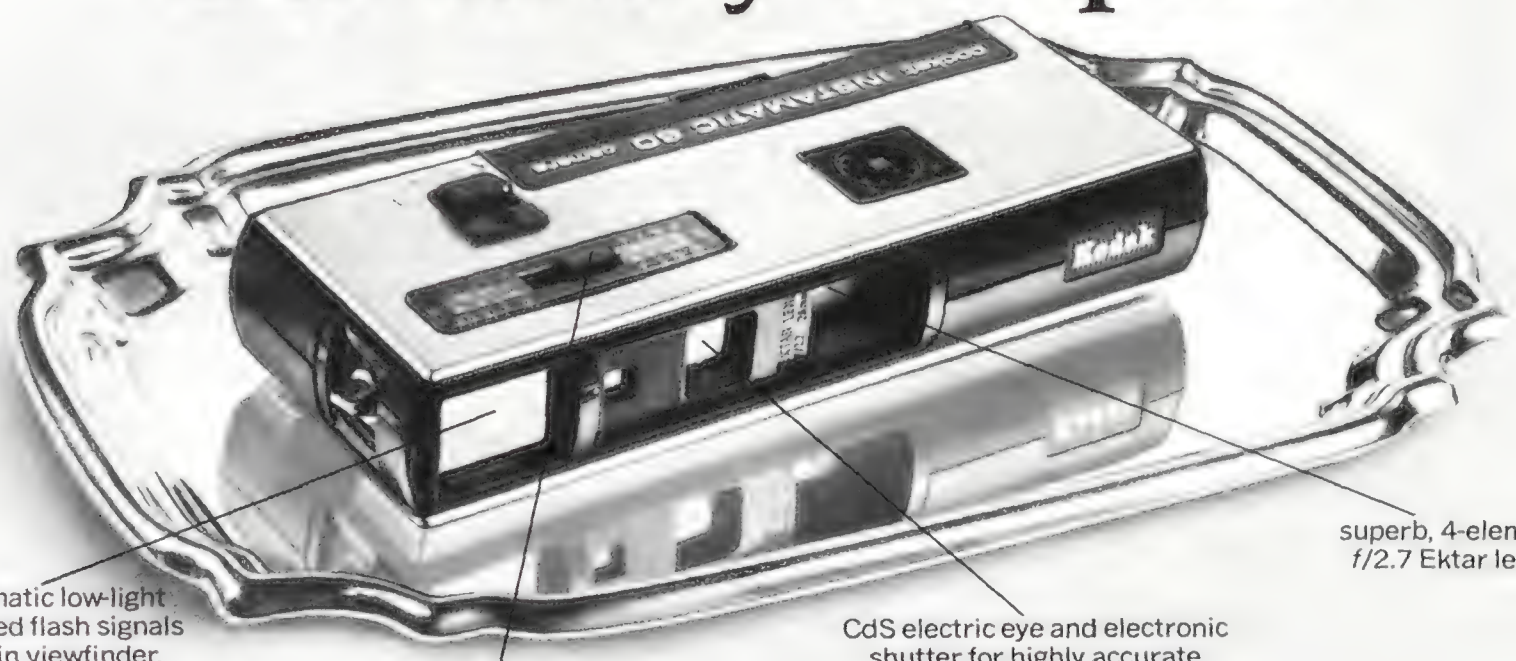
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the impetus for a 1916 Department of Agriculture report that said "Every tract of 10,000 acres which is devoted to hemp raising year by year is equivalent to a sustained pulp-producing capacity of 40,500 acres of average pulpwood lands."

Nevertheless, commercial hemp farming in the United States continued to decline and was virtually buried with the 1937 Marijuana Tax Act. (Hemp farms flourished again briefly and legally during World War II when the government found it had lost its Philippine rope.)

But now there are serious paper shortages. Remember the panicky and unreasonable hoarding of toilet paper a few months back? Many magazines have to scramble for paper for the next month's issues, and book publishers have had to cut back on the number of titles published. Bureaucrats are threatened with extinction, thanks to the shortness of some office supplies. And, even without a paper shortage, librarians should vote for hemp, says Frazier. According to the Library of Congress, books printed 400 years ago on paper made from hemp and flax are still doing fine, while the life expectancy of wood-pulp paper is less than a century.

Given a choice between Mary Jane and Marshall McLuhan, which way will the librarians go?

Hearing by hand

It's a little hard for a layman to see the practical applications of an auditory experiment at York University in Toronto, in which a gentleman named Stuart Anstis attached a microphone to each hand and connected the mikes to headphones —thus effectively placing his ears on his hands. With arms extended and eyes shut, he was immediately adept at locating the sources of sounds (which, one supposes, could be a useful talent in some cases).

With eyes shut and arms crossed, cars moving from left to right seemed to him to be moving in the opposite direction but, according to *New Scientist,* when Mr. Anstis opened his eyes, the cars would seem to jump around and zip back in the other direction. In the course of six days of this bizarre activity, Mr. Anstis became fairly well accustomed to having his ears on his hands—but not completely. One time when a fly buzzed around his hand, he swatted his ear.

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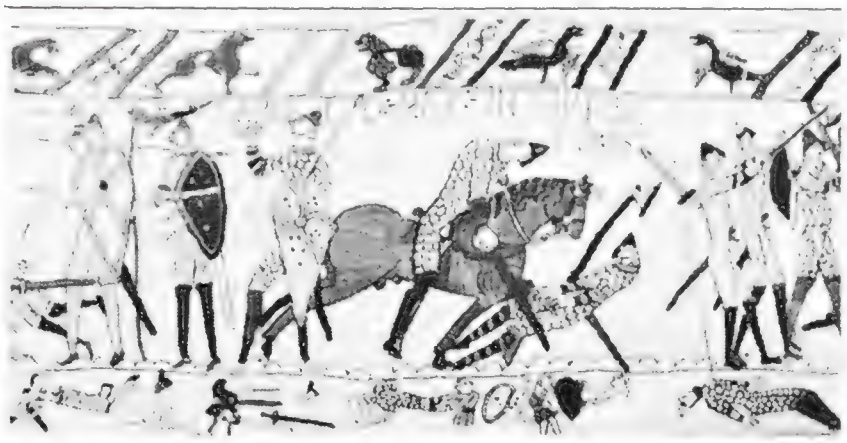
Harold's Eye
Myth or History?

BY JOHN LETTS

Every schoolboy knows the story of the Norman arrow, fired high into the air, that pierced King Harold's eye at the Battle of Hastings. But its first appearance in history was not till 1176; and most probably, arose from a careless reading of the last section of the Bayeux Tapestry, shown on the right.

Yet the tapestry remains our best source of reliable information about the Battle of Hastings, the earliest *written* account (that of Guillaume de Poitiers) coming, most probably, a decade or so later.

Dr. Lewis Thorpe's new book, *The Bayeux Tapestry and the Norman Invasion* (published by The Folio Society) is the first to bring them together: an extensive translation from Guillaume de Poitiers, and the entire 214 foot tapestry, reproduced in continuous format in full colour. Nothing published before has quite done justice to this extraordinary heirloom of the past: unique not only for its great artistic skill but also for the wealth of information it provides on contemporary life and as our earliest evidence about the events surrounding the savage and primitive battle fought on Saturday, 14 October 1066, and the Norman invasion which preceded it—events of the first importance in the whole development of modern Europe.



At left, an arrow is shown at the eye or helmet of an English Knight. But today, Harold's death is usually assumed to be depicted on right.

A Few Untruths about The Folio Society

Several thousand booklovers in the United States belong to an unusual club. Neither wholly a book club nor wholly a publisher, it has headquarters in London, England, a few yards from the site of Shakespeare's Globe Theatre—yet it services your orders as promptly as it could if it was transported to Manhattan. Its name—internationally famous for good book design for over 27 years—is The Folio Society. It doesn't mass produce, it doesn't buy ephemera from other publishers, it doesn't allow you credit, and it doesn't use a computer. And many potential members are wrongly informed about what it *does*. For instance, it doesn't simply reprint classics. A substantial part of the list is previously unpublished or newly translated. It doesn't *only* make luxury editions. The average cost of all the books in the current list is a little over $9 (post free to your door). It *isn't* too English. In choice of book and artist, it is probably the most international book club in the world. And, while it does not lure you to join by fantastic offers, the rewards you get are substantial (like a free copy of *The Bayeux Tapestry*, normally $8.50). See below . . .

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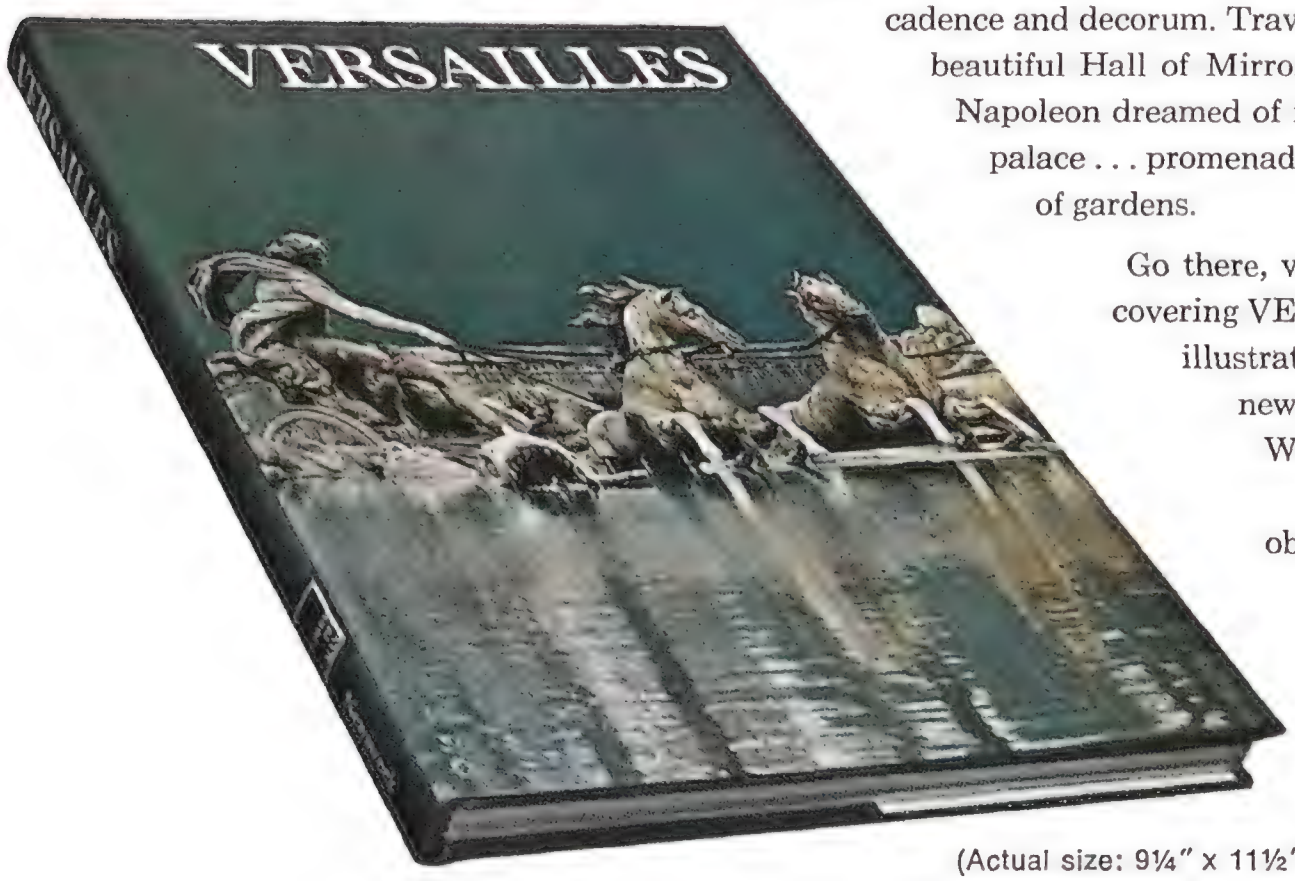

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Book reviews

Energy for Survival:
The Alternative to Extinction
Wilson Clark
(Anchor Press/Doubleday, $12.50)

This encyclopedic piece of science journalism will be useful to many people in a wide variety of fields. It begins with a chapter on the energy basis of our civilization and the rise of American high-energy society, then goes on to look at the limits to energy resources and the restrictions which these limits are likely to place on the growth of the American economy.

It looks at the social structure of energy use—utilities, industry, transportation, agriculture, and homes and buildings—and goes on to argue that the electrical system needs to be decentralized, with the development of "Total Energy" systems, producing energy on a small scale and using the heat, which would otherwise be wasted, to air-condition buildings. Then it considers possible future sources of energy—fossil fuels, nuclear fusion, geothermal, tidal and hydroelectric, along with the potentialities and problems of using hydrogen as fuel.

The best part of the book is on solar energy. This chapter will be an extraordinarily valuable reference to those interested in the field. There is extensive coverage of the projects and proposals which are now going forward, much of it from original sources. In addition, there is an interesting chapter on the energy of the winds, which may be extremely significant during the next 100 years, and again the author has produced an almost encyclopedic work of reference. The documentation is excellent, which is all too rare in a work of this kind. Considerable effort has been made to collect interviews and conversations with people who are active in the various fields.

Some readers may be put off by an occasionally preachy style. As an economist I must also complain that the economics of the book, such as it is, is weak. The author is also rather insensitive to the significance of possible ills of price changes, especially in terms of the elasticity of supply of energy, and there is no real analysis of the impact on the economy of change in the relative price of energy.

These defects, however, do not detract from the overall excellence of the volume.
—Kenneth E. Boulding
Author of a score of books and Professor of Economics, University of Colorado

In Search of Lake Monsters
Peter Costello
(Coward, McCann & Geoghegan, $8.95)

The monster is part of "a poor man's poetry, the imaginative expression of the inarticulate," is the comment of Peter Costello, a young Irishman who started as a skeptical monster hunter and became a believer. "Such fantasies are the nearest thing to creativity, aside from sex and gardening, that most people ever come to," he says.

Since then Costello has made a worldwide survey, in person and through histories, for freshwater monsters—without ever seeing one.

"But yet they remain mysterious to me," he writes, "and will remain so until a living specimen is captured for scientific study." As a believer, he accepts the evidence embodied in more than 3,000 reported sightings of the Loch Ness monster alone, plus a handful of photographs of it, 13 of which are reproduced in this book. In the United States, although lake monsters have been legendary for a century and a half, no concrete evidence supports the legend.

The first third of the book is devoted to the most famous of them all. Loch Ness, 24 miles by up to one mile, is 970 feet deep at one point. Traditions of a "water horse" there go back many centuries. "Nessie," as the press calls her (or him), began to gain international notoriety after a "sighting" on April 14, 1933. The publicity began within three weeks. The first photograph to be published was taken in November, the first motion pictures in December.

Costello credits the press with consistent open-mindedness about Nessie, but the scientific community, he feels, "closed its mind on the subject quite early."

Many of the 27 or so sets of photographs taken of Nessie over the years show so little unsubmerged that one has only the photographer's word as to her appearance immediately before or after the shutter clicked. Not so the exposure made by Kenneth Wilson, a London surgeon who chanced upon Nessie while on a holiday at Loch Ness in April 1934. It shows a monster with a small head atop a long neck arched from the water. This was the real Nessie as scores of observers have described her.

The total evidence, Costello concludes, supports only one of many theories, namely that it, collectively, is a warm-blooded mammal, a big sea lion with a long neck, a half-blind, unaggressive relative of the common seal.

The Loch Ness monster, according to a souvenir postcard sold at the scene

Costello's odyssey throughout the rest of the world is a little tedious because most of the evidence is unsubstantiated reports from newspaper morgues. The book is enlivened by 40 line drawings and documented with a list of sightings of the Loch Ness monsters ashore.
—Odom Fanning
Author of a forthcoming book, *Man and his Environment: Citizen Action.*

Black Majority: Negroes in Colonial South Carolina from 1670 through the Stono Rebellion
Peter H. Wood
(Knopf, $10)

Although the first Africans came as early as 1526—they were members of a Spanish expedition from the West Indies—to the region later called South Carolina, it was

not until the establishment of a proprietary colony in the 1660s that a significant number settled there. After the successful introduction of rice cultivation in the 1690s, the black population grew rapidly, and by 1708 South Carolina was unique among mainland English colonies in having a majority of African inhabitants.

In his persuasive study of South Carolina from 1670 to 1739, Peter H. Wood documents his unconventional conclusion that "the role of the black majority was major rather than minor, active rather than passive."

Wood reconstructs from a massive body of fascinating evidence an interracial, frontier society in which land clearing, cultivation, building, livestock management, fur trading and other necessities encouraged the broad participation of blacks in a wide variety of roles.

A visitor to Charles Town in the early 18th century was confronted with a linguistic diversification that can scarcely be imagined two-and-a-half centuries later: heavily accented English from Barbados, Creole dialects, half a dozen West African languages, and Gullah, the regional dialect which represented a fusion of all of these. In a typically deft analysis of language that helps to reveal the complexity of the American past, Wood points out the linguistic interaction between Portuguese-speaking slaves from Angola, French-speaking slaves of Huguenot masters and others.

A turning point in the history of blacks in the colony was their participation in the Yamasee War of 1715, guaranteeing victory against the Indians. "In simple proportional terms," Wood writes, "Negroes may never have played such a major role in any earlier or later American conflict. . . ."

While the Europeans had defeated the Indians, the prospect of a continually growing African population with fresh war experience was disturbing. The uneasiness was deepened by increased signs of black initiative and independence, deriving from success as skilled artisans.

In the decade between 1730 and 1740, more than 20,000 Africans had been imported to the colony, nearly half of the total black population. This volatile mixture ignited in September 1739 when some 20 Angolan conspirators led by Jemmy gathered near the Stono River in St. Paul's Parish and began a bloody, but ultimately abortive revolt. The result

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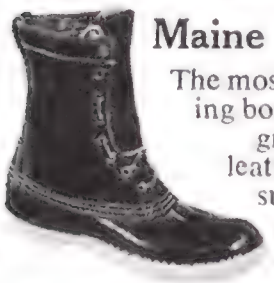

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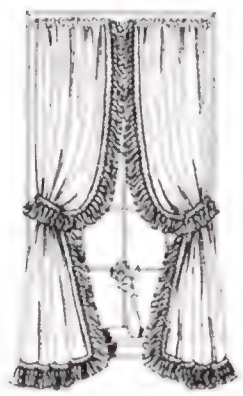

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was a "concerted counterattack" that determined the future history of race relations in the colony. "The new social equilibrium which emerged in the generation before the Revolution," Wood writes, "was based upon a heightened degree of white repression and a reduced amount of black autonomy. By the time Europeans in America were prepared to throw off the yoke of slavery, under which they felt themselves laboring as the subjects of the English king, the enslaved Negroes in South Carolina were in no position to take advantage of the libertarian rhetoric."

Through the prism of this case study, Peter Wood brilliantly focuses the diverse cultural, economic and social spectra that shaped later U.S. history. His searching scholarship will reveal an astonishing new Colonial world, not only to the general readers it desires to reach but also to professional historians.

—*Michael R. Winston,* Director
Moorland-Spingarn Research Center
Howard University, Washington, D.C.

The People and Cultures of Ancient Peru
Luis G. Lumbreras,
translated by Betty J. Meggers
(Smithsonian Institution Press, $15)

When Francisco Pizarro and his hardened band of conquistadores laid waste the great Inca Empire of Tawantinsuyu in the 16th century, their intolerance towards non-Christian peoples and their lust for riches led them to pay scant attention to the magnificent civilization they were bringing to an end. They and the governors and landowners who followed them were merely interested in exploiting the conquered territory and its population for their own gain. In this spirit, ancient cities were systematically ransacked in a search for objects of precious metal to be melted down to bullion. By the time the first archaeologists arrived on the scene during the latter half of the 19th century, there was scarcely an ancient site that had not been devastated.

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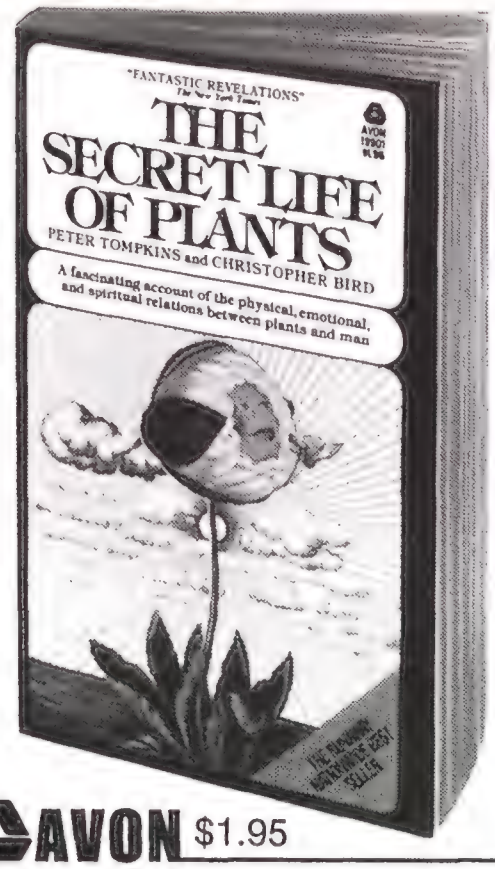
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valleys of Peru has been filled out in considerable detail, but the chronology and interrelationships of highland groups are only now being clarified and the study of the archaeologically important eastern slopes of the Andes has barely begun. In this book Luis G. Lumbreras gives us a comprehensive summary of the archaeologists' current understanding of Peru's past. It is particularly valuable in that it presents the most illuminating discussion of highland cultures so far in print.

The volume represents a complete revision of a textbook that Lumbreras published in Spanish in 1969. The new version is not only updated but, thanks in part to the excellent but unobtrusive translation by Betty Meggers, it is better organized and eminently readable. The author's enthusiasm and thorough understanding of his subject come through the translation unimpaired by distortion or awkward syntax. All maps and charts have been skillfully redrawn and new photographs of sites and objects have been selected, many of them never before published. The result is an altogether handsome and useful book.

Head from archaeological site Chavín de Huantar in west central Peru

It should be welcomed by the interested amateur as well as the archaeology student and professional Peruvianist. Some readers may be disappointed in the rather brief coverage of cultures such as the Moche (Mochica) and Nazca, but they will be amply compensated by being given the opportunity of seeing them in their broad historical perspective. Experts may question a few of Lumbreras' conclusions and the omission of certain data in what must be an abbreviated coverage of a vast subject. Such questions merely reflect the inconclusive status of

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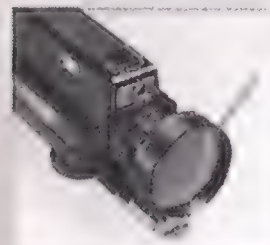

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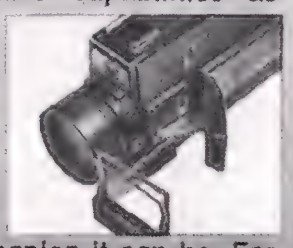

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The first archaeologists to study Andean cultures were either North Americans or Europeans, but Peruvians have played an increasingly dominant role, beginning with Julio C. Tello whose explorations and excavations spanned more than three decades early in this century. It is significant that this publication is the work of the leader of a new generation of talented young Peruvian archaeologists. With the recent appointment of Lumbreras as director of Peru's National Museum of Anthropology and Archaeology, the future of Peruvian archaeology looks bright.

—Alan R. Sawyer
Washington, D.C., author and lecturer specializing in ancient Peruvian art

The Jupiter Effect
John R. Gribbin and Stephen H. Plagemann
(Walker, $7.95)

In the last decade a great deal has been learned about earthquakes. We understand generally their natural causes, have inadvertently managed to generate them ourselves and are now maybe on the verge of having a reliable method of predicting them. All of this has involved extensive research in geophysics, seismology and laboratory studies of rock properties, with results summarized in this book.

Much of *The Jupiter Effect* is overly technical for the general audience that it is intended to alarm. The authors have also intermixed sound scientific knowledge with dubious correlations and the unproved and unlikely theories of other researchers and themselves. Their thesis is, simplistically, that: "... in 1982, 'when the Moon is in the Seventh House, and Jupiter aligns with Mars' and with the other seven planets of the Solar System, Los Angeles will be destroyed."

Basically, scientists Gribbin and Plagemann assert that: (1) the positions of the planets affect the occurrence of sunspots; (2) solar flares (which occur in sunspot regions) cause bad weather on the Earth; (3) large weather disturbances trigger earthquakes.

Based on these suppositions, they predict that an unusual alignment of Jupiter and the other planets in 1982 will produce spots on the sun, that flares will

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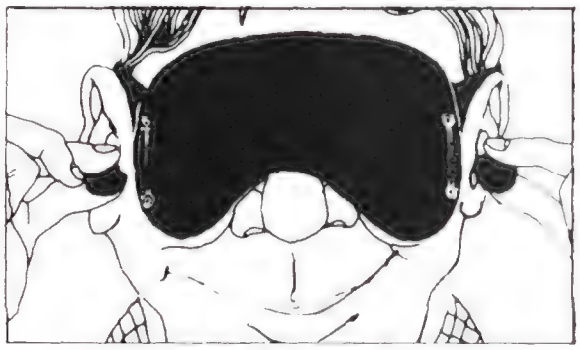

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occur in the spots and disturb the Earth's atmosphere, and that this, in turn, will trigger a great earthquake in California. It is reasonable to accept, as the authors do, that parts of California are now ripe for a major quake, owing to the accumulation of strain in the rock since the last great tremors. Many seismologists concur; and, so far as we know, that quake may occur in 1982 as readily as in any other year. But there is no sound reason to suppose that when the quake comes, it will be a consequence of the chain of the three alleged phenomena proposed in *The Jupiter Effect*.

For example, if the first proposition is incorrect (as nearly every solar physicist in the world will agree), the rare alignment of the planets in 1982 will not cause sunspots and thus will not start the chain of events that allegedly will destroy Los Angeles. On the other hand, if this proposition *is* correct, it may still be insufficient, since the sunspots mysteriously generated by planetary influences might be smaller, less numerous, or less effective at flaring and affecting the Earth than the ordinary sunspots that occur without help from the planets.

If the Gribbin/Plagemann theory is meant to be taken seriously, I wonder why the authors do not predict a great quake for 1979-80, when the next maximum of the sunspot cycle is due? Such a quake ought to release the accumulated strain in the rocks, so that rather little strain would remain in 1982. If the rocks are not strained in 1982, the quakes that can be triggered in them will be minimal, and it should be a safe year.

There are reasons, too, to question the second proposition. Although tantalizingly apparent relationships between sunspots and the Earth's weather have been reported, the significance of these correlations is not clear. One thing *is:* We have lots of large storms on Earth that are not associated with sunspots. If the third proposition were correct, these storms, too, should be followed by earthquakes. Why hasn't this happened?

Gribbin and Plagemann give a competent summary of many of the known facts that tell us how faults arise and earthquakes happen. It is disappointing that they add to this a bizarre prediction based on a chain of weak hypotheses.

—Stephen P. Maran

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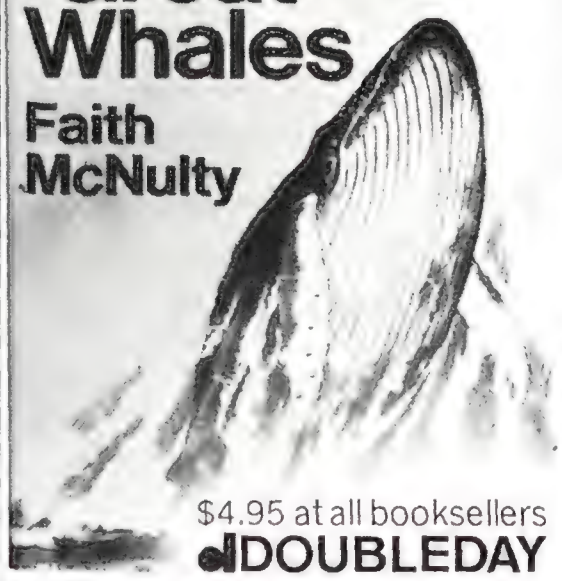

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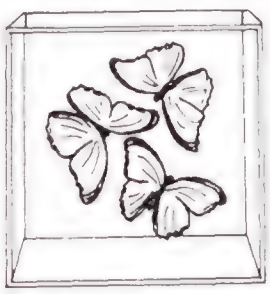

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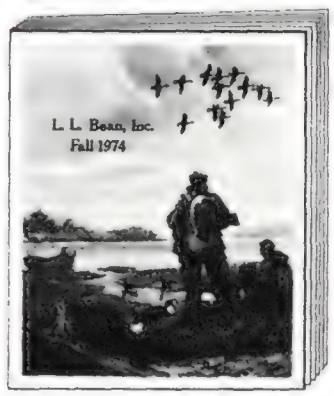

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Smithsonian highlights

Hirshhorn Museum and Sculpture Garden

The public opening of the Smithsonian's newest museum is scheduled for October 4 (see SMITHSONIAN, August 1974). The Hirshhorn collection includes 6,000 modern paintings and sculptures, 900 of which are displayed in historical sequence at the first exhibition. Internationally renowned works by Rodin, Henry Moore, Picasso, Calder, Matisse and Giacometti are among the acquisitions. The museum, a circular structure with an open inner court, and the garden, a multiterraced area with a reflecting pool, are located on the Mall between the Arts and Industries Building and the new National Air and Space Building, with entrances on Independence Avenue and Jefferson Drive, S.W. Posters and serigraphs by Robert Indiana, Larry Rivers, William De Kooning and Kenneth Noland commemorate the opening (see p. 22).

Renwick Gallery

"Figure and Fantasy" presents the works of six East Coast artists who have found expression for fantasy in modern materials and techniques. Their interpretations include not only peaceable dreams and whimsy, but monsters, adventure and science fiction. Many of the works were created especially for the Renwick exhibition. The items range from the candy-bright animal totems of ceramist Bill Stewart, to insectlike monsters by sculptor Christopher Ray and Joan Danziger's fabric-mâché humanoid creatures. Other works included are Norman Laliberte's simple childlike appliqué banners and the fanciful creations of Michelle Clifton and Tommy Simpson—opens October 5.

Divisions of Performing Arts and Musical Instruments

A new Smithsonian series, Man and His Culture, presents the "National Shadow Theater of Malaysia." The group uses hypnotic and colorful shadows of giant puppets to enact Hindu epics—October 4, 8 P.M., Baird Auditorium, Museum of Natural History.

The "Bill Evans Trio" initiates the Jazz Heritage Series—October 13, 8 P.M., Baird Auditorium. Free workshop at 4:30 P.M.

Another new musical series at the Smithsonian, Women in Country Music, presents "Wilma Lee and Stoney Cooper and the Clinch Mountain Clan,"—October 20, 8 P.M., Baird Auditorium.

The American Popular Song Series opens its fall season with a performance by Margaret Whiting—October 27, 8 P.M., Baird Auditorium.

"Concentus Musicus" of Vienna performs with antique instruments in the Musical Instruments Series—October 30, 8:30 P.M., Hall of Musical Instruments, Museum of History and Technology.

For information, call (202) 381-5395.

Puppet Theater, Arts and Industries Building

"The Book of Three" is an adventurous tale based on a book by Lloyd Alexander. It is a story of evil and good, a fantasy rooted in reality and truth—for ticket information and performance times, call (202) 381-5395.

National Collection of Fine Arts

"Chaim Gross: Sculpture and Drawings" is an exhibition of 72 works spanning 50 years of the artist's life. Known for his carvings in a wide variety of woods, Gross is the recipient of numerous major awards for his sculptures.

Resident Associates' Events

"Philadelphia Art Tour" is a two-day trip including visits to the Philadelphia Museum of Art and other private and public collections. Associates also attend a world premiere performance by the Pennsylvania Ballet, followed by a midnight supper at the Philadelphia Academy of Music—October 17-18. For information, call (202) 381-5157.

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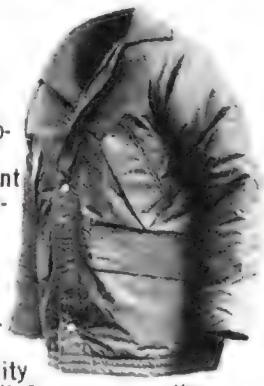

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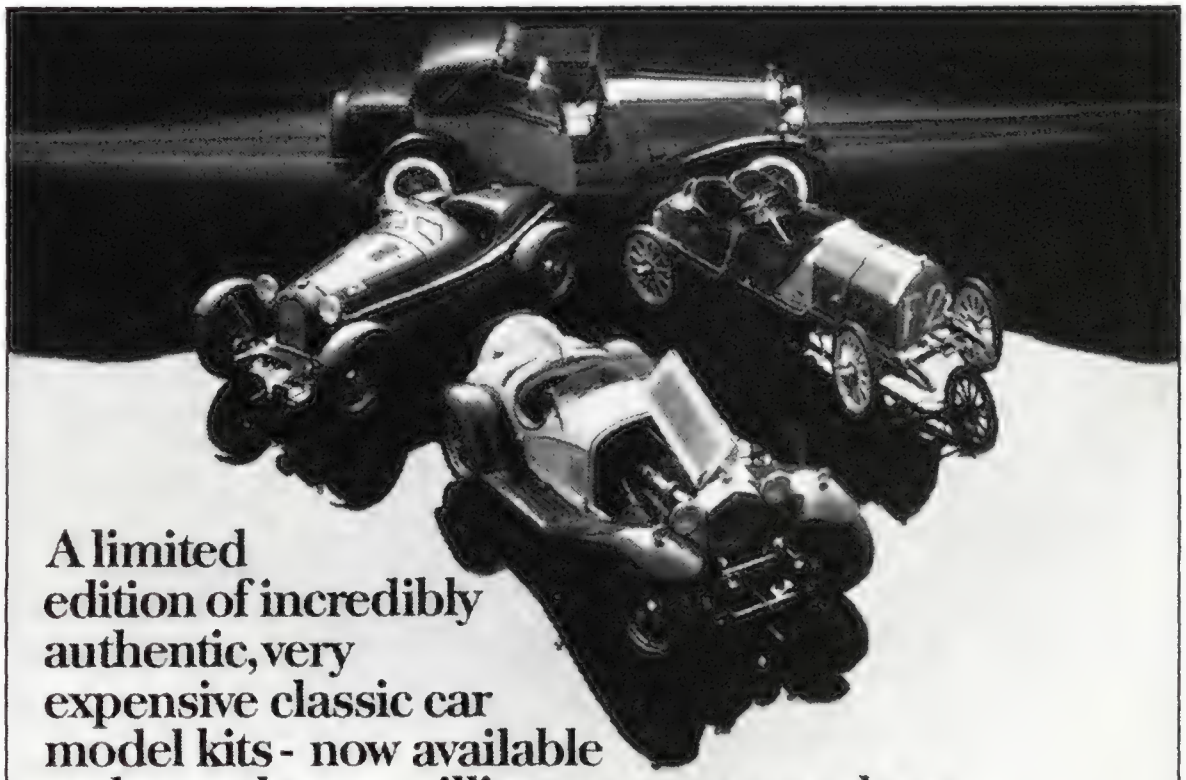

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Museum of History and Technology

"Abandoned Mines" depicts what mining was like in the once-booming lead and zinc district spanning 2,000 miles of southern Kansas, Missouri and northern Oklahoma. Accompanying photographs of life in the mines and transport and processing methods, are miners' tools and an early windlass which hoisted the mined ore. Oil paintings of the abandoned collieries by artist Carol Riley supplement the main exhibit—opens October 15.

"Suiting Everyone," (see SMITHSONIAN, September 1974) is a multidisciplinary exhibit tracing the 200-year history of American clothing. Beginning with stark contrasts in Colonial times between the tailored clothing of the wealthy few and the simple garb worn by the majority of Americans, the exhibit follows the democratization of clothing brought about by the Industrial Revolution, the ready-to-wear industry and the desire of every American for good-quality clothing.

Museum of Natural History

"Plant Portraits" is a botanical study of pharmaceutical plants painted by artist Ida Pemberton. The 50 paintings, of special interest to the pharmacist and botanist, are exhibited in the second-floor rotunda—opens mid-October.

The skeleton of Lexington, the famous racing stallion (see SMITHSONIAN, May 1974), will be restored to the Hall of Osteology in mid-October.

"Ice Age Mammals and the Emergence of Man" is a major new exhibit hall tracing the development of the Ice Age, including its geological aspects, flora, fauna and the evolution of Man. Featured are the phenomena of gigantism, migration, and the isolation and extinction of animals. Glaciation, continental land drift and land bridges are also depicted. Visitors walk through the area on a ramp above moats, islands, glaciers and caves inhabited by giant mammals and prehistoric man. A special area re-creates, in full scale, a Neanderthal burial scene.

Fall Museum Hours

The Smithsonian museum buildings are open daily from 10 A.M. to 5:30 P.M. Hours for the National Zoological Park are 9 A.M. to 4:30 P.M. daily.

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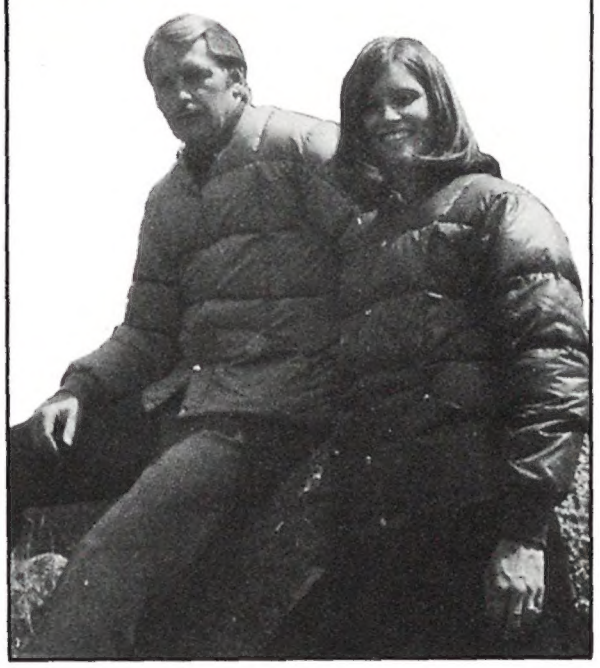

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Traveling Exhibition Service

There are up to 70 different Smithsonian-sponsored exhibitions on display each month throughout the United States and Canada. For a complete listing and information on how to bring an exhibit to your area, write: Traveling Exhibition Service, Smithsonian Institution, Washington, D.C. 20560.

- Newark, Delaware—"Contemporary Hungarian Graphic Art" (University of Delaware, September 28-October 27).
- Honolulu, Hawaii—"Eighth Dulin National Print & Drawing Competition" (University of Hawaii, September 28-October 27).
- Evansville, Indiana—"Molas from the San Blas Islands" (Evansville Museum of Art & Science, October 5-November 3).
- Midland, Texas—"The Persistent Crafts of Poland" (Museum of the Southwest, October 19-November 17).
- Baton Rouge, Louisiana—"The Five Sense Store" (The Arts Council of Baton Rouge, September 28-November 10).
- Eugene, Oregon—"The Nag Hammadi Codices" (University of Oregon, October 5-November 3).
- Chicago, Illinois—"In Beauty It Is Begun" (Field Museum of Natural History, September 28-October 20).
- Baltimore, Maryland—"Our Only World (III)" (Morgan State College, October 12-November 10).
- Wabash, Indiana—"The Magnificent West: American Heritage" (Honeywell Memorial Community Center, September 28-October 27).
- Omaha, Nebraska—"Witness to Our Time" (University of Nebraska, October 5-November 3).

Parking on the Mall

Metro construction has made parking on the Mall near the Smithsonian complex extremely difficult. All parking prior to 10 A.M. is restricted. The use of public transportation is recommended. Write Associates' Reception Center, Smithsonian Institution, Washington, D.C. 20560 for current information.

Smithsonian Commons

Located in the original Smithsonian Castle building, the Commons offers a buffet luncheon and salad bar from 11:30 A.M. to 2 P.M. Also available are coffee and pastries from 10 to 11 A.M.—open Monday through Friday. Please note that the facilities will be closed for part of October.

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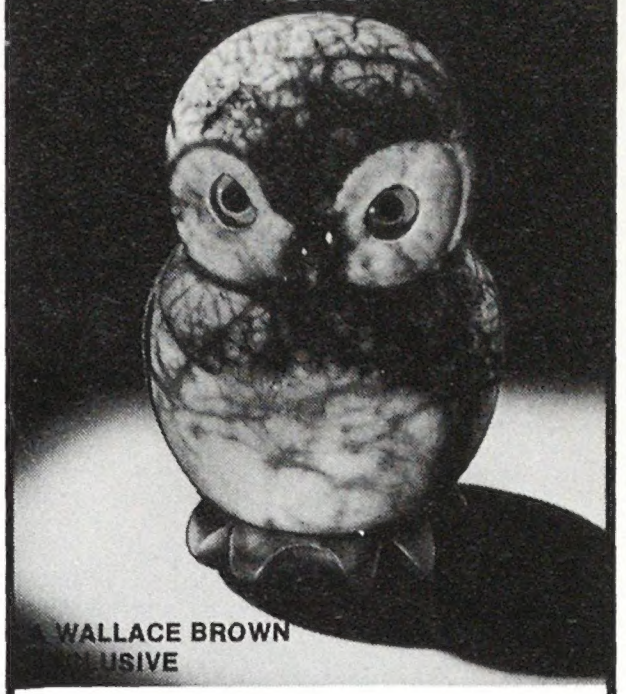

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DIVISION OF BEVIS INDUSTRIES, INC.

By Patrick Ryan

The hard sell also entices the shoplifter

My belief that excessive devotion to professional ambition bodes only eventual calamity was lately reinforced by the report of a lady shoplifter in Nuremberg who—doubtless fully laden at all other concealment points—attempted to steal a frozen chicken from a supermarket by hiding it under her hat. While queuing at the check-out counter beneath such frigid crowning glory, she fainted and was taken to the hospital with suspected brain damage.

In less original but higher numerical achievement, a 28-year-old female student in Colchester, England, wheeled 107 stolen items out of a store, which led the counsel who later prosecuted her to suggest that "she should be put forward for consideration in the *Guinness Book of Records.*" But the congenital American compulsion to command superlatives for all native efforts need have no fear for future preeminence since the report of a thriving school for shoplifters in California which, at a tuition fee of $1,500 up, turned out graduates who "can steal up to five women's suits at a time while talking to a salesclerk." Down in the minor league, it has been reported that "a four-member gang, aged five to seven, worked the toy department of Foley's in Houston under the direction of their five-year-old leader, and, when caught, the gang was found with a sack containing about $100 worth of toys." Fagin, thou shouldst be living at this hour!

Ever since Eve swiped that forbidden fruit, a little larceny seems to have been an essential seasoning in the human recipe. Jacob, with later Biblical approval, robbed Esau of his birthright. Robin Hood is applauded for medieval mugging, and, according to legend, the first public telephone ever installed at Hartford, Connecticut, was loaded with washers on its day of opening.

It has been estimated that one out of every 15 American shoppers snitches something and puts the national loss thereby at a total of around $1.5 billion a year. While the suffering supershopkeepers react by demanding tougher punishments as a deterrent to the light-fingered, a visiting Martian might well wonder if their financial wounds are not in some degree self-inflicted. When, by the studied application of seductive display, color psychology and hypnotic Muzak, you deliberately aim to make people buy more than they intend, are you not also conditioning them to take illegally more than they can afford?

As the susceptible customer is assailed by ever more tempting marketing ploys, the pilfering level inexorably rises. And the profits resulting from the increased sales have to be spent on employing more store detectives and electronic security devices to keep pace with the shoplifters. The desperate state to which such internal competition has reduced the defensive forces is epitomized by an advertisement in the *Times* announcing that "London shopfitters seek advice on security arrangements and precautions from retired convicted shoplifters."

Psychologists have been invoked to find out what motivates the average, neighborhood shoplifter; but they've had little help to date in their research from the reasons given for their peculations by apprehended subjects. A popular excuse in the United States has been that the culprit is writing an article about shoplifting and was just pulling one for literary experience so that his pen might write with firsthand authority. The magistrates at court in Stevenage, England—in common with myself—are still confused by the defense put forward by a gentleman caught purloining purses from a store who said he thought he was in the library stealing books.

In the field of helpful surmise, it is suggested that the preacher in Atlanta, Georgia, who looted a sackful of Bibles and was later trailed to a grocery where he tried to steal a dozen steaks, might have pleaded that he was intent on both spreading the Gospel and preparing, if wildly successful, to feed the 5,000. The French mademoiselle who walked into a London West End emporium naked but for a simple summer dress and left later wearing 10 bras, 20 pairs of pants, 15 dresses and one summer coat, could only have offered in extenuation that baby, it was cold outside. And when the chairman of the biggest British supermarket chain spotted at a branch inspection that there were nine check-out tills where only eight had been installed, the manager, who had fitted the ninth for his personal profit, could only have suggested that, somewhere in the watches of the unattended night, the official octet of cash registers had started breeding.

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